LOXO®
CLADDING SYSTEMS

August Edition
2012

Loxo® 50mm AAC External Wall Panel System

build it with Loxo®

Design & Installation Manual

(always refer to the latest manual as set out on www.loxo.com.au)

Australian Certified

Australian Tested

Memberships

Head Office: 1331 Stud Road, ROWVILLE, VIC 3178 | NSW | QLD | SA | WA |
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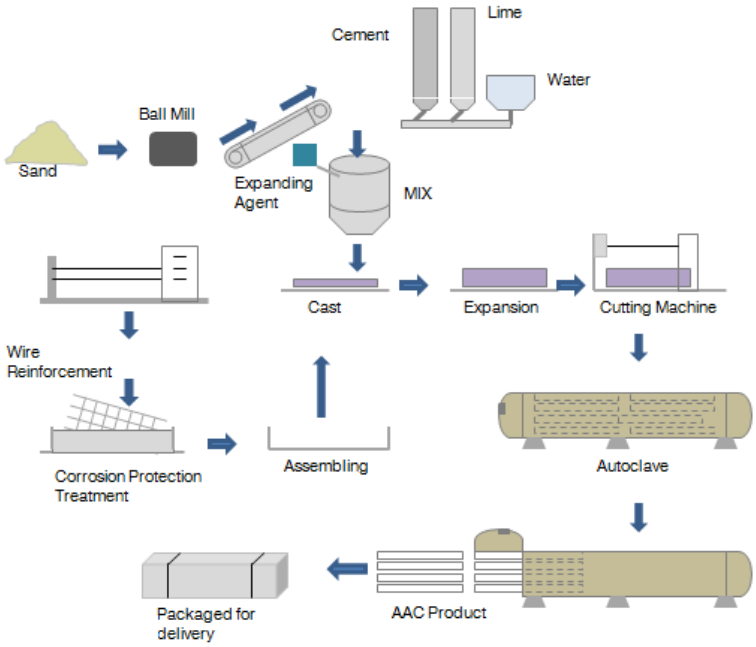
What Is AAC? (Light Weight Concrete)

Autoclaved Aerated Concrete (AAC) is manufactured from cement, sand (silica), lime and water, it is aerated by adding an expanding agent to the mix (small amounts of aluminium paste). The mix is poured into a mould (a very large cake tin), to approximately 2/3 of the height of the mould, almost instantly the expanding agent reacts with the other elements, and the mix begins to rise in the mould. (A chemical reaction expands the mixture to form small, finely-dispersed air bubbles).

The moulds are pre-cured in a heated room for several hours. Then the semi -solid material (still in a green state) is transported to the cutting machine. The soft but semi-solid block is sliced into the required panel size using steel wires. Once sliced, the block is steam pressure cured in autoclaves for up to 12 hours. The expanding chemical reaction combined with the Autoclave process is what gives AAC it's unique properties. AAC has excellent thermal insulation and acoustic absorption properties, it has superior fire resistance qualities and is also termite resistant.

Its properties and specifications satisfy all relevant building codes. Working with AAC is easy and efficient. AAC is both versatile and economical. AAC meets the diverse demands better than any other material due to the numerous advantages of its physical and mechanical properties.



THE AAC MANUFACTURING PROCESS

In Compliance with QMS Certificate ISO 9001

50mm Reinforced AAC Loxo® Panel

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Preface

The LOXO® CLADDING SYSTEM Design & Installation Manual has been developed to provide design, installation and technical information to 'end users' ranging from the owner builder, licensed builders, building consultants, designers, architects and engineers.

Although the details provided in this Design & Installation Manual have been developed by Loxo® and are intended to represent good building practice, the registered professionals involved in the project (such as the licensed builder, architectural designer and engineering consultant) must ensure that the information provided in this Design & Installation Manual is appropriate and suitable for the project.

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Your next project – build it with Loxo®

The Loxo® Panel System is an exterior wall cladding system that provides a lightweight, high-quality, and highly durable cladding solution perfectly suited to both residential and commercial applications.

The Loxo® Panel System comprises 50mm thick, steel reinforced panels manufactured from autoclaved aerated concrete. AAC lightweight reinforced panels are a trusted building material; they have been used in the building industry for several decades in Europe and for the last few decades in Australia and New Zealand.

With exterior coating solutions provided by Loxo® approved Coating Partners, the Loxo® Panel system is one of the most attractive and robust cladding systems on the market today.

Solid and as durable as masonry yet lightweight

Loxo® Panels pass the 'knock test' by consumers because they are a masonry product. Further to that, Loxo® panels are steel reinforced with corrosion protected steel adding to greater strength and security. The average mass of a 50mm thick Loxo® panel is less than 40kg, making it a convenient lightweight product, easily installed by a two man installation process.

Living in a comfortable environment

The Loxo® Panel System is able to achieve very good R-Values as a result of the combination of Thermal Mass and Thermal Resistance. The R-Value can be related to the comfort levels within a dwelling. The greater the R-Value, the more comfortable the temperature will be within that dwelling. The Loxo® Panel System easily achieves the Thermal requirements as set out in the BCA (Refer James M. Fricker Pty Ltd – Report i372a, Dated 6/12/2011)

High fire resistance adds to the security.

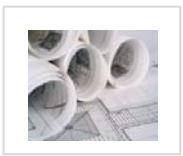
Loxo® (being an AAC Material) is known for its high fire resistance. It will not combust in the event of fire and will not omit toxic gases. The Loxo® 50mm Panel System provides a Load Bearing FRL of 120/120/120 – (refer CSIRO Reports number FSV 1525A Cert. No: 2363A and Assessment Number FCO-2915 & FCO 2944). The Loxo® Panel System also complies with all six (Bush Fire Attack Level Categories (BAL) for external cladding.

Sound acoustic qualities

The Loxo® Panel System provides acoustic performance levels equivalent to other masonry products that are twice as thick. Although the acoustic performance of residential external walls is not a requirement of the BCA, it is reassuring to know that acoustic performance is achieved when you use the Loxo® Panel System. (Refer KOIKAS Acoustics report 2156R20120302).

Today's sustainability for a better tomorrow

Loxo® has been awarded the Global Environmental label because it delivers a number of environmental benefits over bricks and concrete.
A genuine assessment for a genuine building product.

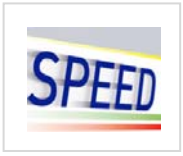


Design flexibility and aesthetic appeal

Loxo® provides building designers the flexibility of utilising a masonry product in areas previously restricted to non masonry cladding products. Loxo® allows designers and consumers the ability to create that inspirational and contemporary look, with a large range of finishes and colours provided by our coating partners. With Loxo® the only limitation to your design is your imagination.

Reduce your Building Cost

The Loxo® cladding system is simple and flexible insofar as it only requires semi skilled trades and allows you the choice to self install using existing lower costs trades or have it supplied and installed by approved installers. Either way this saves you time and money compared to traditional rendered masonry.



Speed of Construction

Loxo® panels are delivered flat packed in lots of 20 panels per pack for ease of workability, less labour and with considerable site cost savings. The speed of construction reaches key stages quickly. Loxo® means a safe and clean worksite with less clean-up at the completion of the project. Two men can easily install an average of 50m^2 of panel per day.

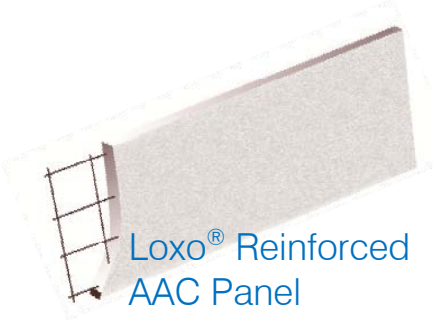
Loxo® & Nasahi in Australia

Nasahi have signed an exclusive agreement within the territory of Australia for Loxo® to be the sole distributor of Nasahi's 50mm AAC Loxo® panel. Nasahi was formed via a joint venture between the world leader in AAC technology (Japan) and the world leader in low cost, efficient manufacturing (China), the result being a high quality, technologically advanced, low cost AAC Building Materials Manufacturer. With a total investment exceeding $45,000,000 USD Nasahi are one of the largest AAC manufactures in the world and are renowned worldwide for their quality manufacturing practices.
Loxo® has adopted Nasahi's high quality 50 mm AAC products and created a simple and robust external cladding system ideally suited for the Australian and New Zealand building markets.

Table 1 Material Properties

Property	Value	Units
Ambient[1] Density, ρ_{amb}	520	kg/m^3
Dry[2] Density, ρ_{dry}	500	kg/m^3
Working[3] Density, ρ_{design}	610	kg/m^3
Permanent Action, *G*	0.3	kN/m^2
Characteristic Unconfined Compressive Strength, f'_{uc}	1.1	MPa
Modulus of Rupture, f'_{ut}	0.73	MPa
Design Ultimate Limit State Bending Capacity, *øM*	0.12	kNm
Design Serviceability Limit State Deflection Limit, δ_{max}	$^{SPAN}/_{240}$	
Coefficient of contraction	0.4	mm/m
Coefficient of thermal expansion	10	x10^{-6}/°C

Notes:
1. Ambient density is that achieved by the product when it has reached equilibrium at 23°C, 50% RH. The moisture content by mass in this state is typically between 2% and 5%.
2. Dry density is the manufacturer's reported density, the typical frame of reference for grading AAC material. It is achieved by oven drying specimens so that the moisture content is 0%.
3. Working density is to be used for calculation of effects due to permanent actions.



Loxo® Reinforced AAC Panel

Quality Control

Quality from start to finish

It is highly recommended that Loxo® panels are erected by approved Installers and coated by approved applicators.
With these measures in place plus strict system protocol Loxo® offers a warranty of 15 years on materials and 7 years on workmanship adding peace of mind to all owners. Loxo® and associated manufacturers both adhere to the ISO 9001 international standards for management of quality.

Compliance with Building Code of Australia

The BCA is part of the Australian National Construction Code system and defines minimum standards for buildings. The BCA consists of two volumes:

Volume One - provides requirements for commercial, residential and public building defined as Class 2 to 9 in the BCA. Typical examples include offices, commercial, health buildings, flats and boarding houses.

Volume Two – Housing Provisions, considers domestic construction defined as Class 1 and 10. Typical examples include houses, garages, swimming pools, carports and the like. The BCA is a performance based building code and contains requirements for Structures, Fire Resistance; Damp & Weatherproofing, Sound Transmissions & Insulation and Energy Efficiency.

The Loxo® Panel System and Compliance with the BCA

The Loxo® Panel System has been assessed to meet and comply with all the necessary performance requirements of the BCA. This design & Installation Manual contains the information necessary to assist in the design of a project.

The designer should ensure the proposed use of the system satisfies the Performance Requirements and provides sufficient design information (including Loxo® appraisal and installation manuals) to satisfy the requirements of the appropriate authority.

The Loxo® Panel System has been appraised by BEAL in New Zealand (Certificate Number C1128) and CodeMark via Global-Mark in Australia (CodeMark Certificate Number 30031) to meet all the required provisions of the Building Code of Australia for Volume One and Volume Two as listed below.

1. Volume One BP1.1, BP1.2 and Volume Two P2.1 in respect of structural performance;
2. Volume One CP1, CP2 and Volume Two P2.3.1 in respect of fire performance;
3. Volume One FP1.4 and Volume Two P2.2.2 in respect of weatherproofing for external walls;
4. Volume One FP1.5 and Volume Two P2.2.3 in respect of damp-proofing for external walls
5. Volume One FP5.2 and Volume Two P2.4.6 in respect of acoustic performance of walls
6. Volume One GP5.1 and Volume Two P2.3.4 and P3.7.4 in respect buildings constructed in a designated bushfire prone area.
7. Volume One JP1 and Volume Two P2.6.1 in respect of energy efficiency of walls

The Loxo® Cladding Panel System has been appraised as an Alternative Solution in terms of compliance with the Building Code of Australia.

The CodeMark Certificate and the BEAL Appraisal are attached in the Appendix of this Design and Installation Manual or visit www.loxo.com.au to download a copy.

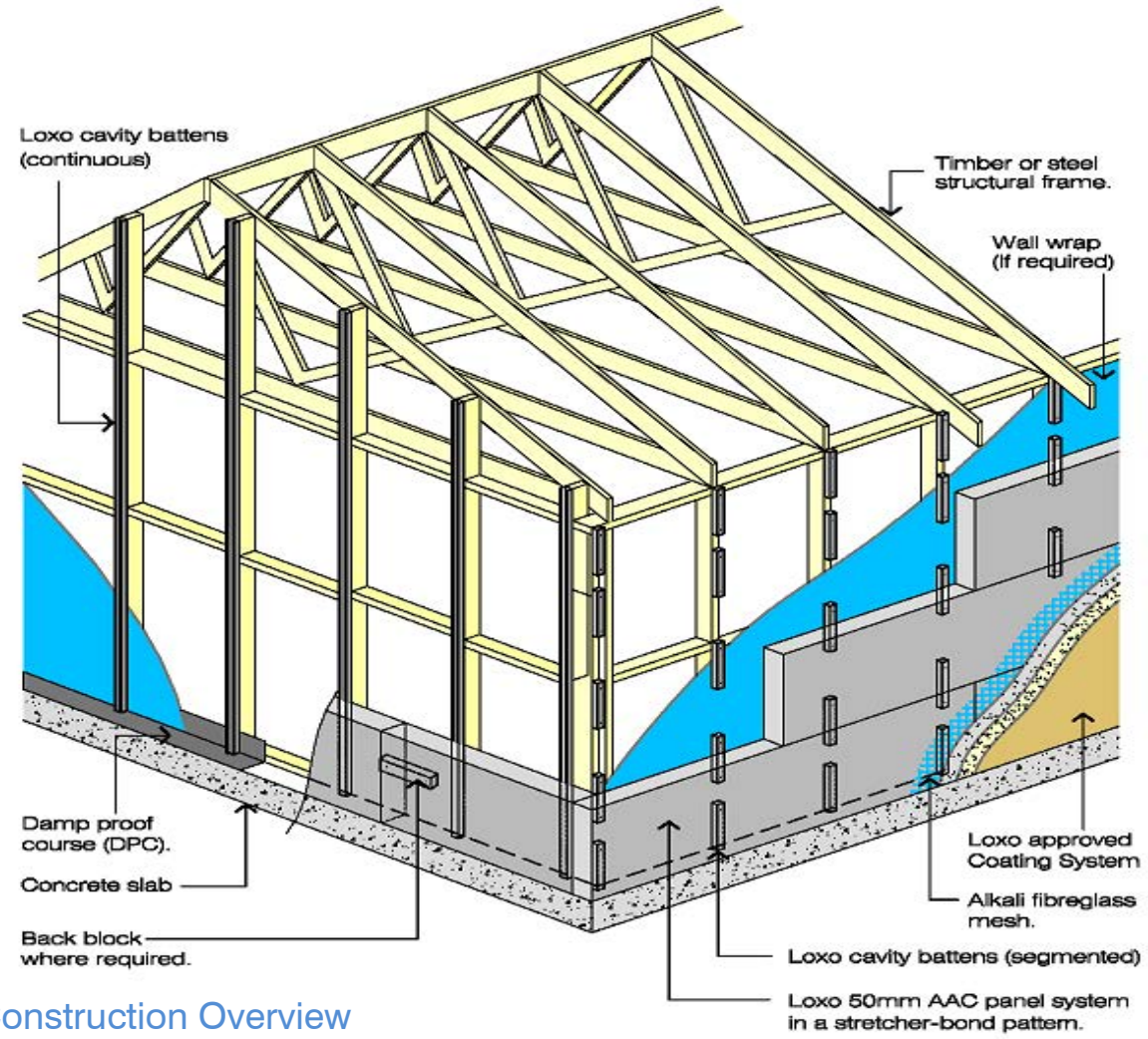
Standard Compliance: All works shall be carried out in accordance with the Building Code of Australia (BCA) and where necessary nominated reference standards.

AS 1720 Timber Framing Code
AS 1684-2006 National Timber Framing Code
AS 2870-1996 Residential Slabs and Footing Construction
AS 3959-2009 Construction of Buildings in Bushfire-Prone Zone Areas
AS 2904-1995 Damp-proof course and flashings
AS 3600-2001 Concrete Structures
AS 1170 Part 1 Loading Code
AS 1170 Part 2 Wind Code
AS 3660.1-2001 Protection of Buildings against subterranean Termite – Part 1 New Buildings
AS 4055-2006 Wind Loading for Housing
AS 3623 and AS/NZ 4600 – Steel Framing
NASH Standard 2005, Part 1 – Steel Framing
Where standards have been revised, the most current version shall apply.

The Loxo® 50mm Lightweight AAC Panel System

An Economical Building Solution

The Loxo® Panel System is designed to be used in new residential construction, extensions or re-cladding for houses & Low Rise Multi-Residential External Walls using timber or steel frames. The system consists of 50mm thick Loxo® Panels, reinforced with corrosion protected steel in both directions, installed horizontally in a **"stretcher-bond"** pattern over segmented or continuous vertical battens attached to the load bearing frame. For fast, clean construction, Loxo panels are available in standard sizes of 2200mm in length and 600mm in width.


Loxo cavity battens (continuous)
Timber or steel structural frame.
Wall wrap (If required)
Damp proof course (DPC).
Concrete slab
Back block where required.
Loxo approved Coating System
Alkali fibreglass mesh.
Loxo cavity battens (segmented)
Loxo 50mm AAC panel system in a stretcher-bond pattern.

Construction Overview

Structure

Wind loads on the building are transferred from the panels to the frame through the fixing and batten system. The frame is the structural component of the wall system, therefore the structural loads including bracing and hold-down requirement for the frames should be designed in accordance with the BCA and the relevant Australian Standards.

Mass

The Loxo® 50mm Panel has an average mass of 28kg/m^2 without coating. In most cases the panel weight is supported at the base. In the event that the panels are suspended, the designer/engineer's must allow for the weight of the panel being fixed to the frame in the design and computation process. Within the computations, 4kg/m^2 should be allowed for external coatings.

Wind Zone

When installed in accordance with this Design & Installation Manual, The Loxo® Panel System (including fixings) is able to be designed to perform in wind zones up to and including N5,C3. The Loxo® Panel System has been appraised for being suitable for use in buildings subjected to design wind speed as defined in AS 4055. The system is designed to meet the performance requirements in the BCA Section B of Volume One and clause P2.1 of Volume Two.
In other wind speed areas, the system can be used up to the ultimate limit state (ULS) wind pressure of 2500Pa when designed specifically in accordance with the BCA.

Note: Although the Loxo® Panel System is considered a drainable non-ventilated cavity system, it is beneficial to seal the doors and window frame junctions, particularly in high wind zone areas and coastal areas.

The following Table 2 identifies the required batten spacing and panel fastener spacing for the wind zones as described in the BCA: *(Ref to drawing Det. 1.3 page 26 for batten and panel screw spacing's)*

Table 2	Max Horizontal Spacing For Battens and Panel Screws		Max Panel Screw Spacing Vertically	
Wind Zone	Corner Zone	Typical Zone	Corner Zone	Typical Zone
N2, N3, C1	600	900	500 (2 screws/600mm)	500(2 screws/600mm)
N4, C2	600	600	250(3 screws/600mm)	500(2 screws/600mm)
N5, C3	450	450	250(3 screws/600mm)	250(3 screws/600mm)

Impact Resistance

The system has adequate resistance to impact loads that the cladding system is likely to be subjected to when used in a residential situation.

Durability

The durability of a product or system refers to the ability of that product or system to be used in its intended application for a defined period of time. AAC products have been used in the building industry worldwide for several decades, and continue to be recognised for their performance, particularly durability. The Loxo® Panel System subjected to normal conditions of environment and use will meet the durability requirements of S1.2.1 of the BCA.

External Moisture

The Loxo® Panel System is designed to prevent the penetration of water that could cause undue dampness and/or damage to building elements, but in the event that water is able to penetrate into the cavity, the system is also designed to allow excess moisture present to be dissipated without causing permanent damage to the building elements, and therefore complies with Performance requirements of the BCA P2.2.2

The technical details provided for weather proofing are based on the design principle of employing both a 1st and 2nd line of defense against moisture entry. Firstly, moisture ingress must be prevented by detailing any joinery or wall junctions as shown in this Design & Installation Manual. Secondly, in the event that water does penetrate the wall system, a drainable cavity ensures and maintains weather proofing.
Any weather proofing details developed by a designer that are outside the scope of this Design & Installation Manual are the responsibility of the designer.

For all external wall applications, (other than a boundary wall with no penetrations), the presence of a drained cavity does not reduce the requirement to ensure the Loxo® Panel System and all the relevant junctions, penetrations etc remain weather proof in order to comply with Clause P2.2.2 of the BCA. In the event that a wall is built on a boundary (with no penetrations) and is abutting the walls of the adjoining property and cannot be coated, the uncoated Loxo® Panel System will act as a drained cavity system and will therefore comply with Performance requirement of the BCA for drained cavity systems.

Fire Resistance

AAC materials have exceptional fire resistance and are non combustible. In the event of fire Loxo® AAC Panels will not emit any toxic gases or vapours. The Loxo® Panel System meets the performance requirements of P2.3.1 of the BCA for use as a Load Bearing External Wall, providing an FRL of 120/120/90 using 10mm plasterboard internal lining or 120/120/120 using 13mm internal fire-grade plasterboard lining – (refer CSIRO Report number FSV 1525A Cert. No: 2363A and Assessment Number FCO-2915 & FCO 2044).

Photo courtesy of www.budwell.com

Compliant with the Bush Fire Zone Requirements

The Loxo® Panel System also complies with all six Bush Fire Attack Level categories (BAL) for external cladding. Loxo AAC is a non combustible material and exceeds an FRL of 30/30/30 when tested from the outside, as per AS3959-2009 Construction of Buildings in Bush Fire-Prone Areas.

The standard defines the construction requirements for external walls as:

> 9.4.1 Walls
> Walls shall be one of the following:
> (a) Walls made of non combustible material (eg masonry, brick veneer, mud brick, aerated concrete, concrete) with a minimum of 90mm in thickness.
> *or*
> (b) A system complying with AS1530.8.2 when tested from the outside
> *or*
> (c) A system with an FRL of 30/30/30 or –/30/30 when tested from the outside
> *or*
> (d) A combination of any of Items (a), (b) or (c) above

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A copy of the Fire Test Certificate is attached in the Appendix of this Design & Installation Manual. For a copy of the Fire Assessment visit our website: www.loxo.com.au

Energy Efficiency

The Loxo® Panel System is able to achieve very good thermal performance (R-Values) as a result of the combination of Thermal Mass and Thermal Resistance. The R-Value can be related to the comfort levels within a dwelling, the greater the R-Value the more comfortable the temperature will be within that dwelling. The Loxo® Panel System easily achieves the Thermal requirements as set out in P2.6.1 of the BCA.

Stated R-Values have been provided by James M Fricker Pty Ltd – Report i372a, Dated 6/12/2011 & ENERTREN Pty Ltd – SUPPLEMENT 120521, Dated 21/05/2012.

Loxo System	**System Details – 70mm Frames** The following Systems are all based on 50mm Loxo® Panel, 20-40mm Cavity, 70mm Frame Thickness, and 10mm Plasterboard internal linings	**Total R Value m^2K/W**	
		Summer	Winter
5070-01 NS	Panel + Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.72	0.74
5070-01 SS	Panel + Cavity + SS Sarking + Frame + No Insulation + Plasterboard	1.33	1.46
5070-02 NS	Panel + Cavity + No Sarking + Frame + R2.0 Insulation + Plasterboard	2.63	2.84
5070-02 SS	Panel + Cavity + SS Sarking + Frame + R2.0 Insulation + Plasterboard	2.63	2.84

Energy Efficiency-(cont.)

Loxo System	System Details – 90mm Frames The following Systems are all based on 50mm Loxo® Panel, 20-40mm Cavity, 90mm Frame Thickness, and 10mm Plasterboard internal linings	Total R Value m²K/W	
		Summer	Winter
5090-01 NS	Panel + Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.72	0.74
5090-01 SS	Panel + Cavity + SS Sarking + Frame + No Insulation + Plasterboard	1.34	1.50
5090-02 NS	Panel + Cavity + No Sarking + Frame + R2.0 Insulation + Plasterboard	2.63(min)	2.84(min)
5090-03 NS	Panel + Cavity + No Sarking + Frame + R2.5 Insulation + Plasterboard	3.11(min)	3.24(min)
5090-02 SS	Panel + Cavity + SS Sarking + Frame + R2.5 Insulation + Plasterboard	3.11(min)	3.24(min)
5090-01 DS	Panel + 40mm Cavity+DS Sarking+Frame+R2.5 Insulation+Plasterboard	3.49	3.83

Notes:
SS = Single Sided Reflective Foil Type Sarking NS = No Sarking DS= Double Sided Anti-Glare Foil
Higher Values can be achieved using double sided reflective foil type sarking and or alternative insulation (contact Loxo® for more information).

Air Tightness

The prevention of airflow and drafts within the cavity significantly assist in the thermal performance of a wall system. The Loxo® Panel System is non-ventilated, therefore reducing drafts that could occur within the cavity, hence significantly improving Thermal Performance.

Insulation

To increase the R-Value and therefore comfort level, the use of insulation materials is recommended. The insulation should be installed to form a continuous barrier in accordance with the BCA.

Sarking Wall Wrap

The use of sarking although not mandatory with the Loxo® Panel System, is considered good building practice. Sarking not only assists in controlling condensation, it creates an additional layer of air within the wall, which helps close the cavity, and greatly improves Thermal Insulation and Energy Efficiency. If sarking is required to provide a weatherproofing function, it should comply with AS/NZS4200 Parts 1 and 2.

Acoustic Performance

The Loxo® Panel System offers good acoustic performance. To significantly increase the acoustic performance against outside noise, the use of sound insulation materials is recommended.

Acoustic Performance for the Loxo Wall System

The Bare 50mm Loxo Panel has an Rw = 33

External Wall System

Loxo System	System Details The following Systems are all based on 50mm Loxo® Panel, no sarking, one layer of R1.5 insulation batts, and 10mm Plasterboard internal linings	Acoustic Rating	
		Rw	Rw + Ctr
5070-20	70mm Timber Frame + 20mm Cavity Battens	45	41
5070-40	70mm Timber Frame + 40mm Cavity Battens	45	42
5090-20	90mm Timber Frame + 20mm Cavity Battens	45	42
5090-40	90mm Timber Frame + 40mm Cavity Battens	45	42
5076-20	76mm Steel Frame + 20mm Cavity Battens	53	46
5076-40	76mm Steel Frame + 40mm Cavity Battens	53	47
5092-20	92mm Steel Frame + 20mm Cavity Battens	53	47
5092-40	92mm Steel Frame + 40mm Cavity Battens	54	48

Stated Acoustic Values have been provided by Koikas Acoustics – Report 2156R20120302 Dated 02/03/2012

Design Principles for Loxo® Panel System

The design principles which the Loxo® Panel System are based on, are those used for residential framed construction.

Framing Design for the Loxo® Panel System

The support structure (stud frame) shall be designed by the frame manufacturer or the relevant design engineer, and should be designed in accordance with the specific framing codes for timber or steel frames.

Timber Frames

The timber framing must comply with the relevant Parts of AS1684 for both buildings, and parts of buildings. Studs should be sized as normal to suit the wind loadings, vertical loading and stud height in accordance with the BCA. Timber studs should be spaced at nominal 600mm centres. Noggins must be flush fitted at a maximum of 1350mm centres.

Steel Frames

The steel framing must comply with NASH Standard 2005, Part 1 Residential and low-rise steel framing. For steel framing the minimum framing specification is 'C' section studs and noggins of overall section size 75mm web and 32mm flange. Minimum Steel thickness must be 0.75mm in accordance with AS 3623 and AS/NZ4600.

Bracing

The timber or steel framed walls must be braced for a medium weight wall cladding in accordance with AS 1684 for timber framing and AS3623 and AS/NZS4600 for steel framing.

Design Detail Considerations

Wall Lengths

Using the Loxo® Panels System is fast and economical, with reduced waste being a significant advantage of the system. Knowing that the Loxo panels are 2200mm long and installed in a "stretcher-bond" pattern, designing a building in 275mm modules will assist in ensuring project efficiency.

Wall Heights

Knowing that the Loxo® panels are 600mm in width and are installed in rows up the wall, the wall height (from the base of the panel to 30mm above the eave) should be designed (as close as possible) in 300mm modules which will also assist in ensuring project efficiency.

Footings

Loxo® panels can be a direct substitute for a thin sheet cladding material e.g. fibre cement sheeting or polystyrene cladding and fixed with a 20-40mm cavity on a timber or steel frame. The panels can be supported on a rebated step down, or alternatively they can be fixed overhanging of the concrete slab or timber base. (Refer. The Loxo® Panel System Drawings Det. 4.0).The footings should comply with AS 2870 1996 Residential Slabs and Footing construction.

Termites

Although termites do not eat or nest in AAC, termite protection is still a mandatory requirement.
The simplest method of termite protection is the 75mm exposed slab edge perimeter method. Due to the variation in requirements from state to state in Australia it is the builder's responsibility to ensure that all council and BCA requirements are met with regards to termite attacks. Refer to BCA 2011 Vol. 2 Part 3.1.3 and reference code AS3660, requirements for the management and termite risk.

Vertical Control Joints

Vertical control joints (articulated Joints) are located at internal corners and as per geotechnical engineers design report (Soil Report). If the distance between corners exceeds 6m, control joints should be located in line with window and door openings. These joints require 5-10mm gaps between panels which are injected with expandable foam or backing rod and sealed with approved moisture compatible flexible sealant (Refer. The Loxo® Panel System Drawings Det. 5.0 and 13.0)

Multi - Storey Construction

Loxo® Cladding Panels can be used for multi-storey construction when fixed in accordance with the Loxo® Panel System (Ref Drawings Det. 4.1 to Det. 4.3)

Horizontal Joints

Horizontal control joints are required:

- When the wall height exceeds 8 metres;
- When timber joists are not seasoned (greater than 1% shrinkage of the floor joist depth as confirmed by the timber manufacture), these Joints require a minimum gap of 20mm;
- If the horizontal joint is within the FLOOR JOIST ZONE.

(Refer. The Loxo® Panel System Drawings Det. 4.1 to Det. 4.3 and Det. 13.0)

Loxo® Panel System Components

Loxo® Cavity Battens

(Refer. The Loxo® Panel System Drawings Det. 1.1)

20mm to 40mm Cavity Battens supplied in 250mm lengths or 3000mm continuous lengths

Cavity battens are manufactured from either:

1. 0.42 BMT, G300 Galvanised Metal
2. H3 treated pine timber, or
3. Very High Density (Class VH) EPS with a density of no less than 28kg/m^3

Loxo® Cavity Batten Fixing Requirements

- 2.87mm x 50mm (glue coated, plain shank galvanised nails) used to fix the 20mm timber battens to timber frames. (2 per batten or 2 per 600mm wall height);
- 3.05mm x 75mm (glue coated, plain shank galvanised framing nails) used to fix the 40mm timber battens to timber frames. (2 per batten or 2 per 600mm wall height);
- 12 x 40mm galvanized drill point countersunk screws used to fix the 20mm timber battens to steel frames. (2 per batten or 2 per 600mm wall height);
- 12 x 60mm galvanized drill point countersunk screws used to fix the 40mm timber battens to steel frames. (2 per batten or 2 per 600mm wall height);
- Construction Adhesive such as Maxbond, Liquid Nails or similar may be used to temporarily fix the EPS battens to the frame or building wrap;
- 12-11 x 25mm Hex Head Type 17 screws used to temporarily fix the metal battens to timber frames;
- 10-16 x 16mm Hex Head Teks screws used to fix temporarily the metal battens to metal frames;
- Note: A minimum of Class 3 fasteners must be used with the Loxo® Panel System. AS3566 corrosion class 3 fasteners must be used in BCA defined corrosion zones 1, 2, 3, and 4. Class 4 or Grade 304 stainless steel in the sea spray zone.

Loxo® Vermin Control /Cavity Closure Strips

(Refer. The Loxo Panel System Drawings Det: 1.0)

Metal Vermin Control Strips; or Cavity Closer Strips are continuous metal battens used to close the gap between the bottom plate and the back of the panel. Mitre cut battens at corners to maintain vermin proofing. The battens are fixed to the bottom plate at 900mm centres using:

- 12-11 x 25mm Hex Head Type 17 screws for timber frames;
- 10-16 x 16mm Hex Head Tek screws for steel frames;

Timber Vermin Control Strips; or Cavity Closer Strips are continuous timber Loxo® Cavity Battens used to close the gap between the bottom plate and the back of the panel. Mitre cut or butt timber battens at corners to maintain vermin proofing. The battens are fixed to the bottom plate at 900mm centres using hot dipped galvanized steel flat head nails.

Loxo® Panels

The 50mm thick, steel reinforced Loxo® Cladding Panels are manufactured from autoclaved aerated concrete with a dry density of 520kg/m^3-560kg/m^3. The 50mm thick Loxo® Cladding Panels are supplied in a standard length of 2200mm and a standard width of 600mm, and have an average mass of approx 37kg/panel.

50mm Loxo® Panel Fasteners

For wind zones up to and including N3, C1, the panel fasteners may be fixed into the timber battens without having to be fixed into the frame, provided the timber battens have been fixed to the frames as per the Loxo® Cavity Battens Requirements. For wind zone greater than N3, C1, the panel fasteners must penetrate into the wall frame a minimum of 25mm for timber frames and a minimum of 5 screw threads for metal frames.

- 14-10 x 75mm MP Bugle Head Type 17 screws must be used to fix the panels into the timber battens or through the 20mm cavity battens into the steel frames
- 14-10 x 100mm MP Bugle Head Type 17 screws must be used to fix the panels through the 20mm cavity battens into the timber frames or to fix panels to steel frames (up to 0.75 BMT) with battens up to a maximum cavity thickness of 40mm
- 14-10 x 125mm MP Bugle Head Type 17 screws must be used to fix the panels through the 40mm cavity battens into the timber frames.

Notes:

- A minimum of Class 3 fasteners must be used with the Loxo® Panel System. AS3566 corrosion class 3 fasteners must be used in BCA defined corrosion zones 1, 2, 3, and 4. Class 4 or Grade 304 stainless steel in the sea spray zone.
- Bugle Head Fasteners fixed through the face of the panels must be embedded a minimum of 5mm into the panel to comply with the corrosion requirements.

Loxo® Panel Adhesive

Loxo® Panel Adhesive is a polymer modified cement-based adhesive supplied in 20kg bags. It is supplied by Loxo®, mixed on-site with clean water (see instructions printed on each bag), and is applied to all edges of the panels (except control joint). Loxo® Panel Adhesive is also used for bonding Decorative Trims and banding, along with minor patching, repairs and stopping of screw heads on the Loxo® panels.

Loxo® Corrosion Protection Touch Up Paint

When the Loxo® Panels are cut to size, ensure that no reinforcing steel is exposed to openings or corners. When reinforcing steel is exposed it must be treated with the Loxo® Corrosion Protection Touch Up Paint. It is supplied in 250ml containers. The instructions for use are on the container.

Loxo® PVC Vent

Loxo® PVC Vents are not required with a non-ventilated system, however if specified by the project engineer, they can be used to create visible drain vents and therefore create a ventilated cavity wall system. If the Loxo® PVC Vents are to be used, it is advisable that sarking is used as good building practice. (Refer. The Loxo® Panel System Drawings Det. 14.0)

Damp Proof Course (DPC) & Flashing

- DPC is used to prevent rising damp from concrete footings, slabs or paths wetting the base of the panels.
- All flashings should be specifically designed for the wall frames and be compatible with the Loxo® Panel System.
- Damp-proof courses should comply with the BCA, including AS 2904-1995 Damp-proof course and flashings.
- The designer should detail any specific requirements for special back-flashings required where the Loxo® Cladding Panel joins another substrate/cladding

Sarking

Although the use of sarking is not mandatory with the Loxo® Panel System, it is good building practice to do so. However, sarking is required between:

- EPS battens and the frame to prevent trapped moisture between the batten and the frame.
- Metal battens and CCA treated timber frames to prevent corrosion of the metal batten.
- Metal battens and some LOSP treated frames to prevent corrosion of the metal batten. In the event that LOSP frames are to be used with metal battens, it is the responsibility of the project manager to confirm with the timber frame supplier if sarking is required to prevent corrosion of the metal battens.

Construction Adhesive

Construction Adhesive such as Maxbond, Liquid Nails or similar should be used for adhering accessories such as Aluminium External Corner angles to Loxo® Cladding Panels, or temporarily fixing EPS Cavity Battens prior to the installation of the panel fasteners.

Flexible Sealant

An external grade flexible sealant such as Bostik Seal'N'Flex or equivalent should be used at control joints, around windows, doors and penetrations through the Loxo® Panels, to prevent or reduce the amount of water ingress into the cavity. Before sealant application, check with sealant manufacturer to confirm if a primer is required when using over Loxo® (AAC) Panels.

Fire Rated Sealant

An external grade fire rated sealant such as Fullers FIRESOUND Fire Rated Acoustic Sealant or Bostik FIREBAN ONE Low Modulus Fire Rated Polyurethane Sealant or equivalent must be used in control joints in all fire rated wall applications such as boundary walls.

Installation Process

Loxo® Panel System Installation Sequence:

1. Ensure builder has completed the frame ready for the Loxo® Panel System. A pre-cladding check list is available on our website: www.loxo.com.au
2. DPC must be applied to foundation and up-stand as per the Loxo® Panel System Drawings Det. 2.0, 3.0, 4.0, 4.1, 4.2, 4.3, 8.0 and Det.11.0
3. Check to ensure framing is straight and plumb with a straight edge, especially corner studs.
4. If specified, install the required wall wrap in accordance with the BCA and manufacturer's instructions.
5. On overhanging foundations (as per the Loxo® Panel System Drawings Det. 4.0 and Det. 4.1), install Loxo® vermin control cavity closers 20mm or 40mm as required.
6. Batten Installation

a) For the segmented batten installation, it is important to identify the position of each row of the Loxo® battens. Measure 600mm up the stud from the rebated step down of the footing, or 50mm below internal floor level for overhanging panels. Mark a horizontal line around the building at 600mm up to 30mm above the eave line or top plate, refer to the Loxo® Panel System Drawings Det. 1.2, 2.0 and Det. 3.0.

b) For the continuous battens simply attach the continuous length of the batten to the stud at the height required.

7. Fix the 20mm or 40mm × 35mm x 250mm Loxo® battens vertically as per specifications from the bottom plate in line with the studs. Repeat this process vertically up the studs as identified in point 6 above. The horizontal distance between battens must comply with the structural requirements for the Wind Zone of the project; refer to Table 2 on page 8. Extra battens can be placed to allow for irregularities in framing or in anticipated extra support for the Loxo® Panels.
8. Starting from a corner, place the first Loxo® Panel horizontally onto the rebate. Use a spirit level to ensure the Loxo® Panel is level and is either flush or overhanging the rebate as required. Push the Loxo® Panel hard against the battens and screw fix through the exterior face, through or into the batten as specified to a minimum of 50mm in from the edges of the Loxo® Panel. A minimum of 6 screws are required per standard Loxo® Panel and each screw must be wound into the Loxo® Panel until the head is embedded by a minimum of 5mm. Loxo® Panels can be cantilevered a maximum of 500mm beyond the stud and to ensure that the panels are aligned, back blocking is required.
9. Apply Loxo® Panel Adhesive approximately 2–3mm thick along the vertical edge of the Loxo® Panel. Abut the next Loxo® Panel hard against the fixed Loxo® Panel. Ensure this Loxo® Panel is level and screw throughout or into the battens as specified to a minimum of 50mm in from the edges of the Loxo® Panel. Repeat this procedure around the perimeter of the building.
10. Apply Loxo® Panel Adhesive approximately 2–3mm thick along the top edge of the first row of Loxo® Panels approximately one panel length. Lay the next row of Loxo® Panels with a minimum of 275mm stretcher-bond overlap of the Loxo® Panel below, then screw Loxo® Panel as outlined above. For panel layout guidelines, refer to the Loxo® Panel System Drawings Det. 1.2 and Det. 2.0.
11. Loxo® Panels may be cut to size and whenever possible no reinforcing steel should be exposed to openings or corners. All exposed steel reinforcement must be treated with Loxo® Corrosion Protection Touch Up Paint.
12. Apply Loxo® approved sealant to window and door jambs surrounds as per specification.

The Loxo® Panel System installation must be performed or supervised by approved installers to ensure quality of workmanship.

Loxo® Panel Installation

1. Wall Frames and Roof Trusses Completed.
   - Plumbing and Electrical Services within the Frame (as shown) is Preferred.

2. Install Flashing
   - DPC fixed to bottom plate with the rebate covered and overlapped at the corners
   - Install the sarking as required.

3 Prepare Cavity
   - Select Cavity Size
   - Loxo® Vermin control if required.
   - Timber/Metal/EPS Battens

4 Install Loxo® Panel
   - Start at one corner
   - Install in Stretcher-Bond pattern
   - 6 screws per standard panel
   - Loxo® adhesive to vertical and horizontal joints
   - Cut panels to suit
   - Coat exposed reinforcement
   - Minimum panel stagger 275mm

5 **Loxo® Approved Coating System** (Refer to Specification page 19)

Loxo Panel Installation

Plumbing and Electrical Services

Services are preferred to be installed through the frame but they can be fixed to the outside of the frame in a horizontal direction between the battens typically 300mm up from the bottom of the first row of panels, or as agreed with the Loxo® Panel Installer. Penetrations through the Loxo® Panel for services should be neatly cut and the 5 to 10mm clearance gap around the penetration must be sealed with a Loxo® approved sealant. PVC sheathed electrical cables must be prevented from direct contact with the Loxo® EPS Battens and placed in a conduit.

Basic Tools Required to Install Loxo® Panels

- Power drills and drive bits
- Cordless drills
- Power saw with diamond blade
- Vacuum
- Power planer
- Nail or Staple Gun
- Mixing Drill
- Mixing Buckets
- Stopping blade
- Adhesive Trowel
- Hawk and Steel Trowel
- Sanding Float
- Rasp
- Timber Drop Saw
- Grinder
- Electric Leads and Power Box

For a complete list of tools and PPE required to install the Loxo® Panel System visit our website: www.loxo.com.au

Loxo® Approved Coating Systems Specification

General

Only Loxo® Approved Coating Systems are to be applied over Loxo® Panels.
For a complete list of Loxo® Approved Coating Systems.
Visit our website: www.loxo.com.au

Typically a Loxo® Approved Coating System comprises:

- A specially formulated polymer modified cement based render system;
- A fibreglass reinforcing mesh towelled into the Base Coat Render;
- A Primer (only if it is the manufacturers specific requirement);
- A Wet or Dry Texture;
- A Paint System.

Note: The Loxo® Panel System demands the use of External Corner Angles for that true perfect finish.

Pre Coating Requirement

Before commencing application of the coating system, the coating applicator must ensure that all required penetrations have been carried out and that the Loxo® Panels are suitably dry and ready for the coating application.

Application Of Coating

All Coating Components used for the coating of the Loxo® Cladding Panels are to be supplied by the Loxo® approved coating manufacturer and or sub-contractors.

The Coating System should be applied by contractors aligned and approved by the Loxo® Approved Coating Partners.
For a list of the approved Loxo® Coating Partners visit our website:
www.loxo.com.au

Meshed Base Coat Render

The Meshed Base Coat Render must be a polymer-modified, Portland cement-based render; it is mixed on site with clean drinking water. It is applied as a base coat, either over or encapsulating a high quality alkali resistant fibre glass mesh reinforcement. Ensure there is a minimum of 2mm thickness over the mesh. The total meshed base coat should have a minimum thickness of 3mm.

The Reinforcing Mesh must be a high quality alkali resistant fiberglass mesh with a nominal size of approximately 5mm square and a weight of 165g/m^2 for use in domestic and light commercial situations.

Primer Coat (Optional)

A water based primer/sealer to enhance adhesion can be applied if necessary. (Refer to coating manufacturer's specification for suitable primer coats that are compatible with this system)

Texture Coat

Two specifications for the Texture Coat material are available.

Dry Texture:

A cement based polymer modified coating applied with a trowel or float over the basecoat. The texture must have a minimum thickness of 1.0mm. It is **mandatory** to overcoat the dry texture with a Loxo® approved paint system (Membrane Coating).

- Wet Texture:
  A high full acrylic coating applied with a trowel or float over the basecoat. The texture must have a minimum thickness of 1.0mm. The Wet Textures may be coloured through (tinted) and may not require the application of a paint system (dependent on coating manufacturers recommendations and warranty). In the case were a paint system is not required, the application of the wet texture forms the primary means of weather resistance.

Paint System (Membrane Coating)

The paint system (membrane coating) must comprise a minimum of two coats of a 100% acrylic-based exterior paint. The paint / membrane must be applied to a minimum dry film thickness of 150*um* per coat and must have a crack bridging capability of five (5) times the total dry film thickness. The application of the paint system forms the primary means of weather resistance.

Coating System Approval

Proprietary coating systems must be approved by Loxo® prior to their use. The coating manufacturer must confirm that they comply with the Loxo® Approved Coating System specifications and that they will provide a minimum 7 year manufacturer's warranty when used with the Loxo® Panel System.

Delivery

Loxo® Panels are flat-packed delivered to site (20 in a pack) and shall be unloaded or moved with approved lifting devices. For transport and lifting purposes the wet mass of the panels should be used. Each pack has a wet mass of approximately 900kg including the packaging. To minimise double handling and save time the packs should be unloaded as close as possible to the installation area. Loxo® panel packs should only be stacked one pack high (on site) and properly supported on level ground. Always consult the project engineer as to the adequacy of the structure to support the packs if they are to be placed on any part of the structure.

Storage

All Loxo® material should be kept dry and preferably under cover, all care should be taken to avoid damage to the face, ends and edges of the panels.
When Loxo® Panels are stored outside they must be off the ground and protected from the weather.

Manual Handling

Physical manual handling of Loxo® Panels around the work site should be kept to a minimum, always support the weight by a two man lift procedure, and where the manual handling becomes excessive with respect to distance from the installation area, Loxo® recommends the use of trolleys and/or other mechanical devices.

Occupational Health & Safety (OH&S):

Loxo® AAC Panels, along with all clay, concrete and quarry products contains Crystalline Silica, or Silica Dust. Prolonged exposure to Silica dust without the correct PPE can be harmful and potentially cause life threatening health hazards such as bronchitis, silicosis and lung cancer.

The Loxo® AAC Panel itself does not cause health problems – however when cutting, drilling, sawing, routing, chasing, sanding and in any way breaking up the material there is the potential for health problems to occur unless standard precautionary measures are taken. Breathing in the dust repeatedly, over many years may lead to health problems.

It is most unlikely to breath in the fine silica dust when stacking, loading or laying panels.
When breaking up the material, sawing, drilling etc it is imperative that safety masks and eye protection is worn. Ensure the mask fits properly and is approved for use with dust. Protective clothing should also be worn e.g. overalls. These should be washed often and not in the same wash as other clothes.

The site should be cleaned of dust every day and when using power tools these should be tagged for use as required and be fitted with efficient and well maintained dust extraction devices.

The Loxo® Cladding Panel Installer on site has a responsibility to inform all employees of these Health and Safety requirements under the Occupational Health and Safety Act.

Personal Protective Equipment (PPE)

When working with Loxo® panels, Loxo® recommends (as a minimum) that the following PPE is worn:

- P1 or P2 Dust masks – complying with AS/NZS1715 and AS/NZS1716
- Glasses / Goggles - complying with AS1336
- Ear Plugs / Ear Muffs – Class 5
- Gloves, long sleeve shirt and long pants – to prevent possible skin irritation and skin cancer from working outdoors.
- Steel Cap Boots

Cutting

Loxo® Panels can be easily cut, drilled, routered, or chased using power or hand tools. When working with Loxo® Panels ensure that the PPE as previously described is worn. As an added measure of containing the dust when working with AAC products, Loxo® recommends the use of dust extraction equipment.

Loxo® panels are delivered to site flat packed, which gives flexibility to cutting as it can be used as the cutting bench as the panels are required, (make sure that the saw blade is adjusted to the right cutting depth so as not to cut through the panel below). Any exposed reinforcement during cutting must be coated with Loxo® Corrosion Protection Touch Up Paint. For a copy of the full range of Loxo® MSDS sheets, visit the Loxo® website; www.loxo.com.au

Maintenance

Regular checks and cleaning, at least annually, of the jointing and coating systems must be carried out and any routine maintenance performed as and when required to maintain weather tightness. Any damage to the coating system must be promptly repaired by an approved applicator to ensure the integrity of the coating system is maintained.

Hazardous Materials

In reference to the BCA regarding Hazardous Building Materials, Loxo® Panels are non-hazardous, providing all safety precautions included in this literature are adhered to.

Loxo® is a quality building product, and is backed by Loxo® Cladding Systems Pty Ltd.

For further details on engineering and building with the Loxo® system, sales or technical assistance please visit our website: www.loxo.com.au and obtain the latest Design & Installation Manual.

Guarantee

Loxo® Autoclaved Aerated Concrete products are guaranteed to be free of defect in material and manufacture.

The Loxo® Approved Coating products are guaranteed by the coating manufacturers, for weatherproofing against peeling, flaking, cracking or deterioration, provided the system has been properly maintained and subjected to normal conditions of exposure.

The Coating Manufacturers guarantee applies only where all material components of the Loxo® Approved Coating System have been prepared and installed in accordance with their written instructions and technical specifications.

Installation workmanship and coating application work is guaranteed by the approved installer / applicator personnel who perform this work.

Substitution of the Loxo® Panel System and Loxo® Approved Coating System components is not permissible and if alternative brands, materials or elements are used, this will void all guarantees.

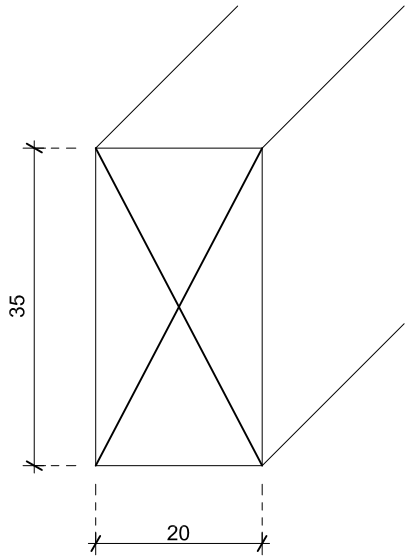
This guarantee excludes all other guarantees and liability for consequential damage or losses in connection with defective cladding, other than those imposed by legislation.

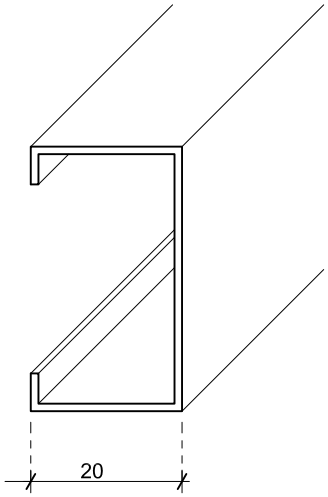
Warranty

Loxo® Panels and associated materials, when installed as exterior wall cladding, are warranted for a minimum of ***15 years*** (from date of purchase), meeting the ***7 year*** requirements outlined in the BCA and the relevant Australian Standards. The Loxo® products are designed to have a life span significantly in excess of this minimum period.

The Loxo® Approved Coating Systems are warranted by the coating system manufacturers for a period of 7 years (from date of completion) meeting the 7 year requirements outlined in the BCA and the relevant Australian Standards. The Loxo® Approved Coating products are designed to have a life span significantly in excess of this minimum period.

LOXO VERMIN CONTROL CAVITY CLOSER





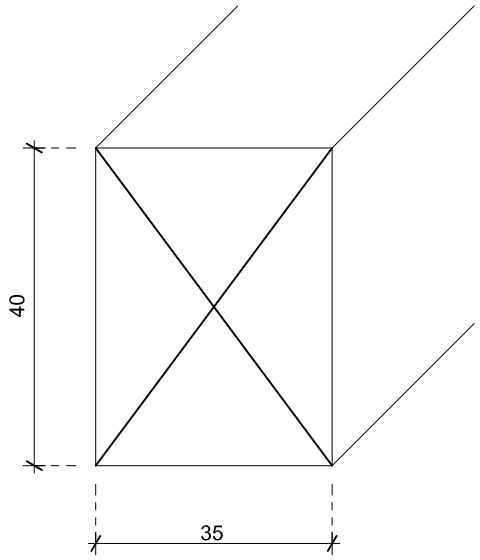
20mm TIMBER BATTEN

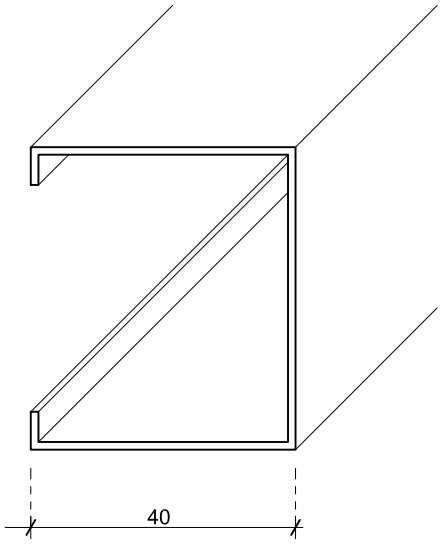
(H3. Treated)

20mm METAL BATTEN

Note: The Loxo vermin control cavity closer is only required if the Loxo panel is not supported by a slab rebate (i.e unenclosed sub-floor or overhanging the slab edge).
It must be fixed continuously to the bottom plate of frame.
The metal batten corners must be mitre-cut to maintain vermin proofing.

20mm CAVITY CLOSER





40mm TIMBER BATTEN

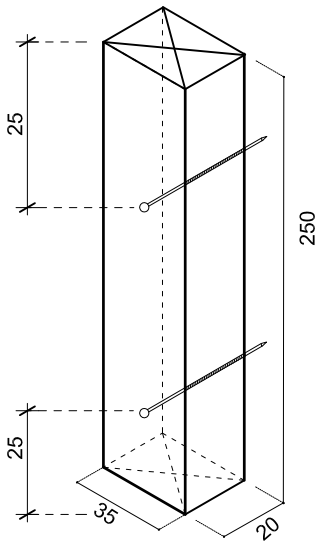
(H3. Treated)

40mm METAL BATTEN

Note: The Loxo vermin control cavity closer is only required if the Loxo panel is not supported by a slab rebate (i.e unenclosed sub-floor or overhanging the slab edge).
It must be fixed continuously to the bottom plate of frame.
The metal batten corners must be mitre-cut to maintain vermin proofing.

40mm CAVITY CLOSER

LOXO BATTEN SPECIFICATION



- H3 Treated timber
- 35 x 20 x (250mm or continuous)

- Battens fixed to timber frames using 2 x 50mm nails.

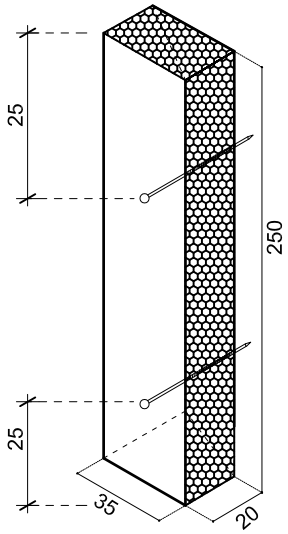
- Battens fixed to metal frames using 2 x 35mm drill point screws.

- Panels must be fixed into frame through timber battens using 100mm bugle batten screws.

Note:

It is good building practice to provide wall wrap (but not required)

20mm TIMBER BATTEN



- VH EPS

- 35 x 20 x (250mm or continuous)

- Battens fixed to timber frames using 2 x 40mm galvanised clouts or fully glued over wall wrap using Loxo approved EPS adhesive.

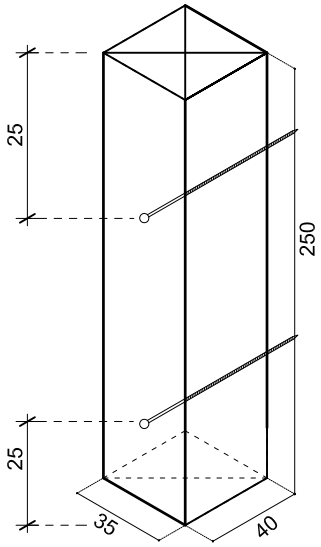
- Battens fixed to metal frames using 2 x 40mm countersunk, drill point galvanised screws or fully glued over wall wrap using Loxo approved EPS adhesive.

- Panels must be fixed into frame through EPS battens using 100mm bugles.

Note:

When using EPS battens wall wrap is required.

20mm EPS BATTEN



- H3 Treated timber

- 35 x 40 x (250mm or continuous)

- Battens fixed to timber frames using 2 x 75mm nails.

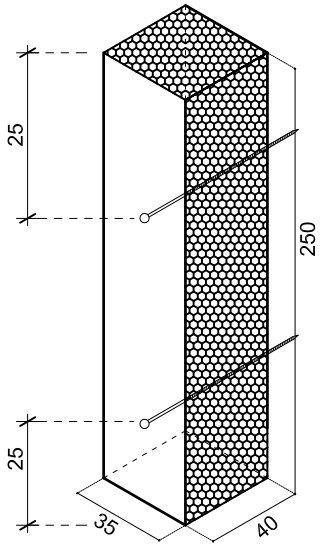
- Battens fixed to metal frames using 2 x 50mm drill point screws.

- Panels can be fixed onto timber battens (in low wind zones) using 75mm bugle screws or fixed onto the frame using 125mm bugle screws.

Note:

It is good building practice to provide wall wrap (but not required)

40mm TIMBER BATTEN



- VH EPS

- 35 x 40 x (250mm or continuous)

- Battens fixed to timber frames using 2 x 50mm galvanised clouts or fully glued over wall wrap using Loxo approved EPS adhesive.

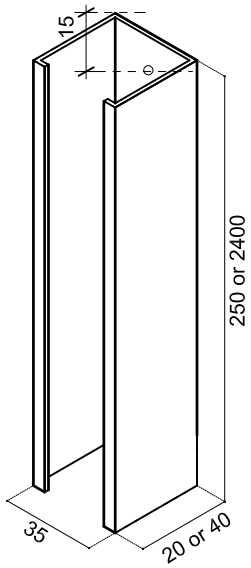
- Battens fixed to metal frames using 2 x 50mm countersunk, drill point galvanised screws or fully glued over wall wrap using Loxo approved EPS adhesive.

- Panels must be fixed into frame through EPS battens using 125mm bugles.

Note:

When using EPS battens wall wrap is required.

40mm EPS BATTEN



- 0.42mm Thick galvanised metal
- 35 x (20 or 40mm) x (250 or continuous)

- Battens fixed to timber frames using 25mm screws.
- Battens fixed to metal frames using 16mm drill point screws.

FOR TIMBER FRAME

- Panels must be fixed into timber frames through metal battens using 100mm bugle screws for the 20mm batten.
- Panels must be fixed into timber frames through metal battens using 125mm bugle screws for the 40mm batten.

FOR STEEL FRAME

- Panels must be fixed into steel frames through metal battens using 75mm bugle screws for the 20mm batten.
- Panels must be fixed into steel frames through metal battens using 100mm bugle screws for the 40mm batten.

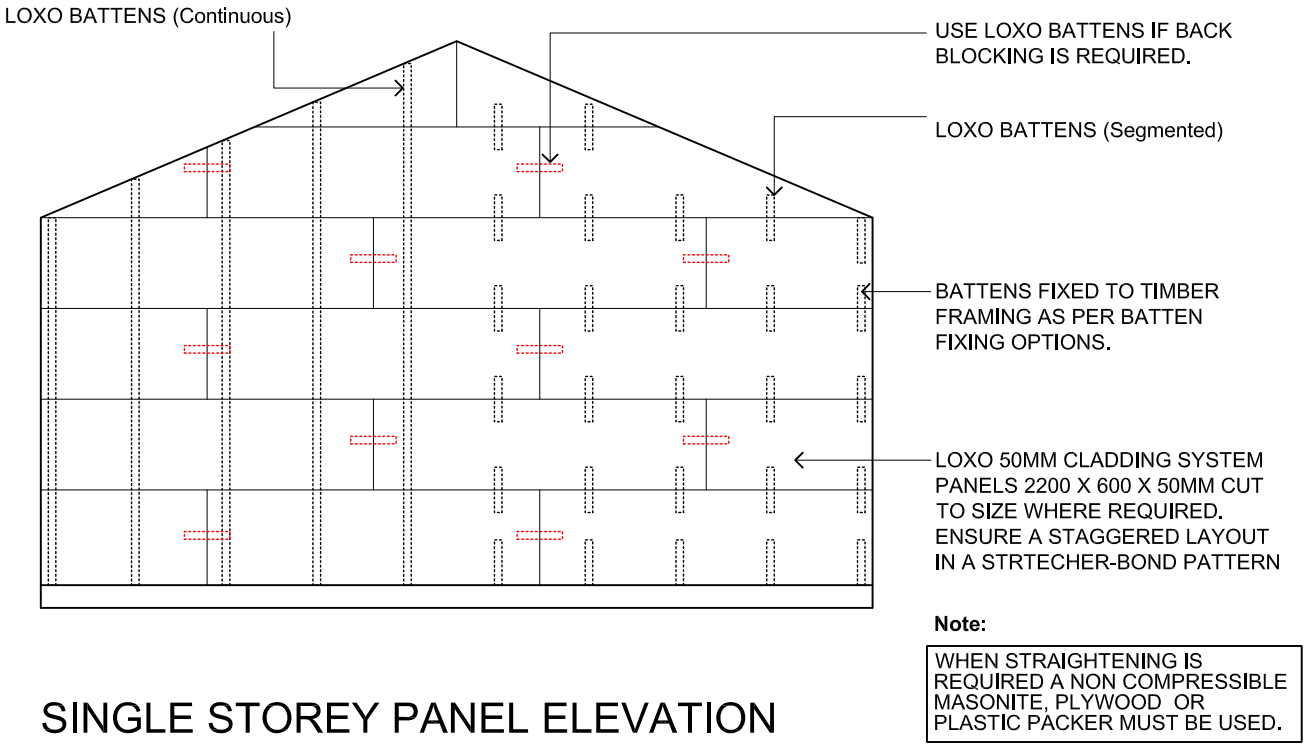
Note:

It is good building practice to provide wall wrap (but not required)

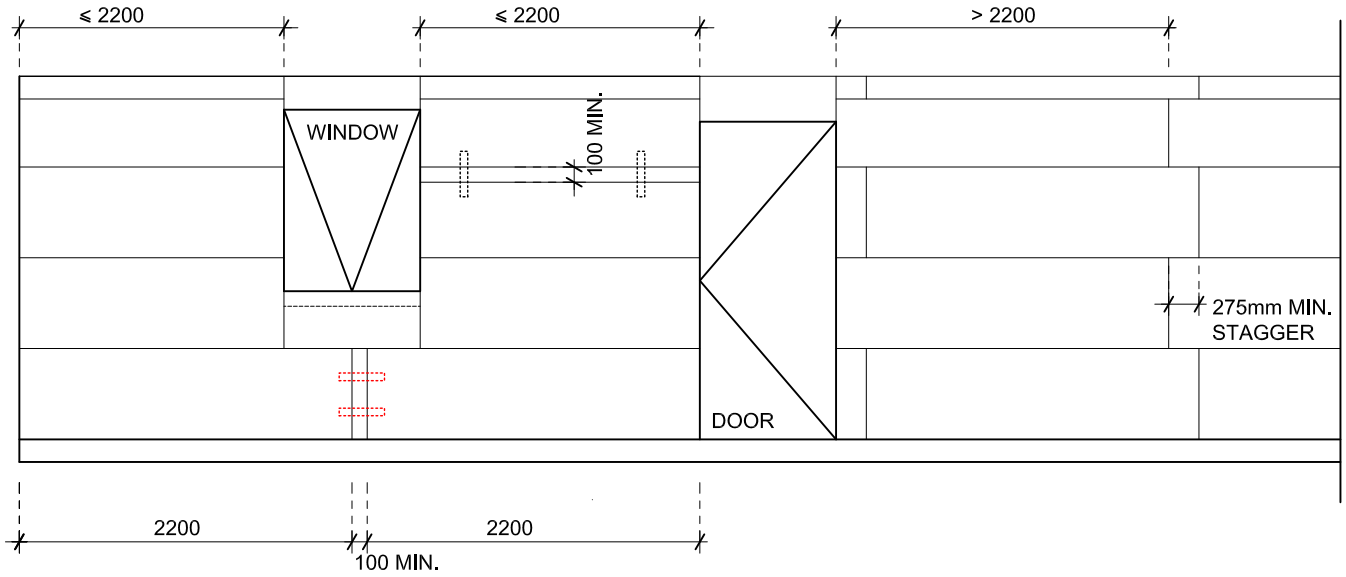
20mm or 40mm METAL BATTEN

LOXO BATTEN & PANEL LAYOUT

Det. 1.2
Scale 1:1


LOXO BATTENS (Continuous)
USE LOXO BATTENS IF BACK BLOCKING IS REQUIRED.
LOXO BATTENS (Segmented)
BATTENS FIXED TO TIMBER FRAMING AS PER BATTEN FIXING OPTIONS.
LOXO 50MM CLADDING SYSTEM PANELS 2200 X 600 X 50MM CUT TO SIZE WHERE REQUIRED. ENSURE A STAGGERED LAYOUT IN A STRTECHER-BOND PATTERN
Note:
WHEN STRAIGHTENING IS REQUIRED A NON COMPRESSIBLE MASONITE, PLYWOOD OR PLASTIC PACKER MUST BE USED.

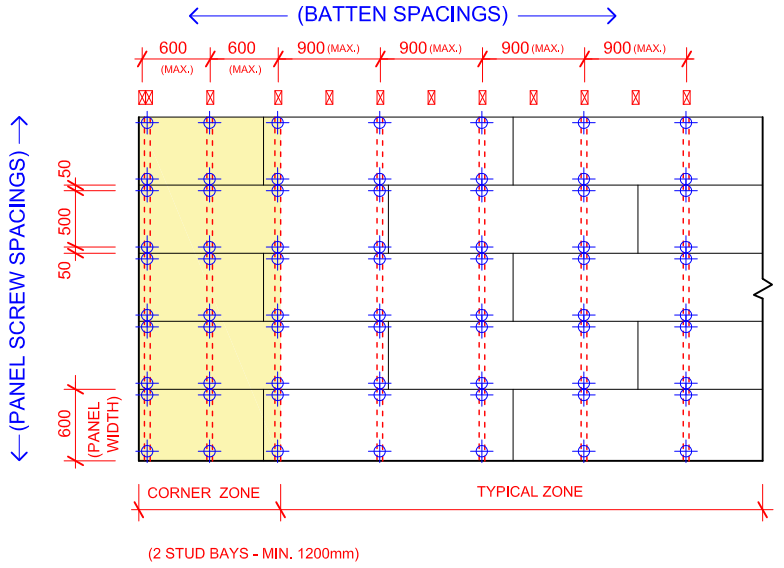
SINGLE STOREY PANEL ELEVATION



PANEL LAYOUT GUIDELINE

LOXO BATTEN & PANEL SCREW SPACINGS

Det. 1.3
Scale 1:1



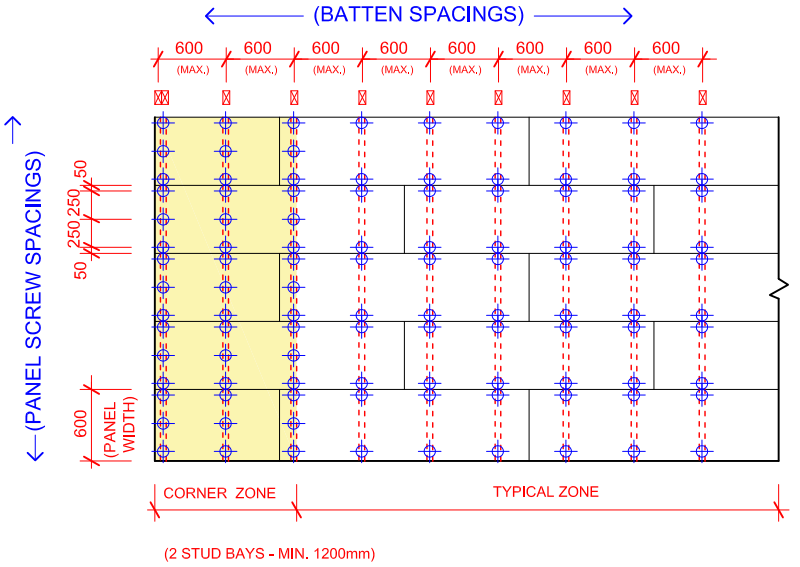
LEGEND

DENOTES BATTENS

DENOTES PANEL SCREWS (50mm MIN. FROM PANEL EDGE)

BATTEN & PANEL SCREW SPACINGS

(WIND ZONE N2, N3, C1 DEPICTED)



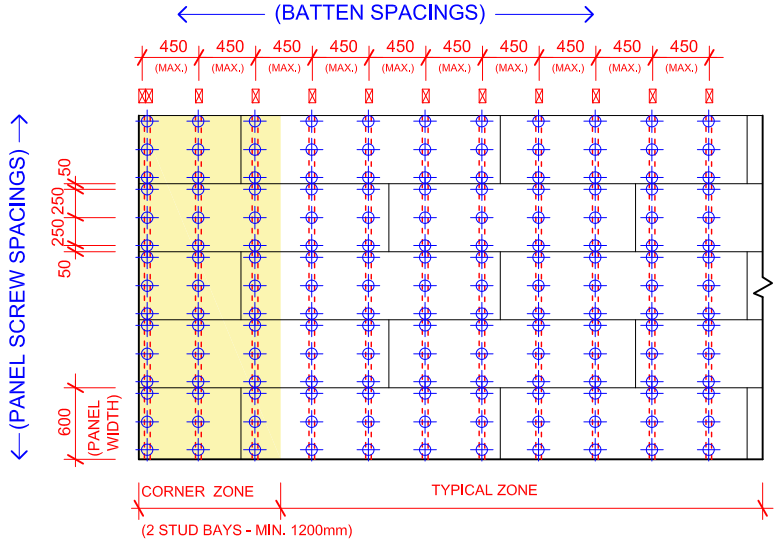
LEGEND

DENOTES BATTENS

DENOTES PANEL SCREWS (50mm MIN. FROM PANEL EDGE)

BATTEN & PANEL SCREW SPACINGS

(WIND ZONE N4, C2 DEPICTED)



LEGEND

DENOTES BATTENS

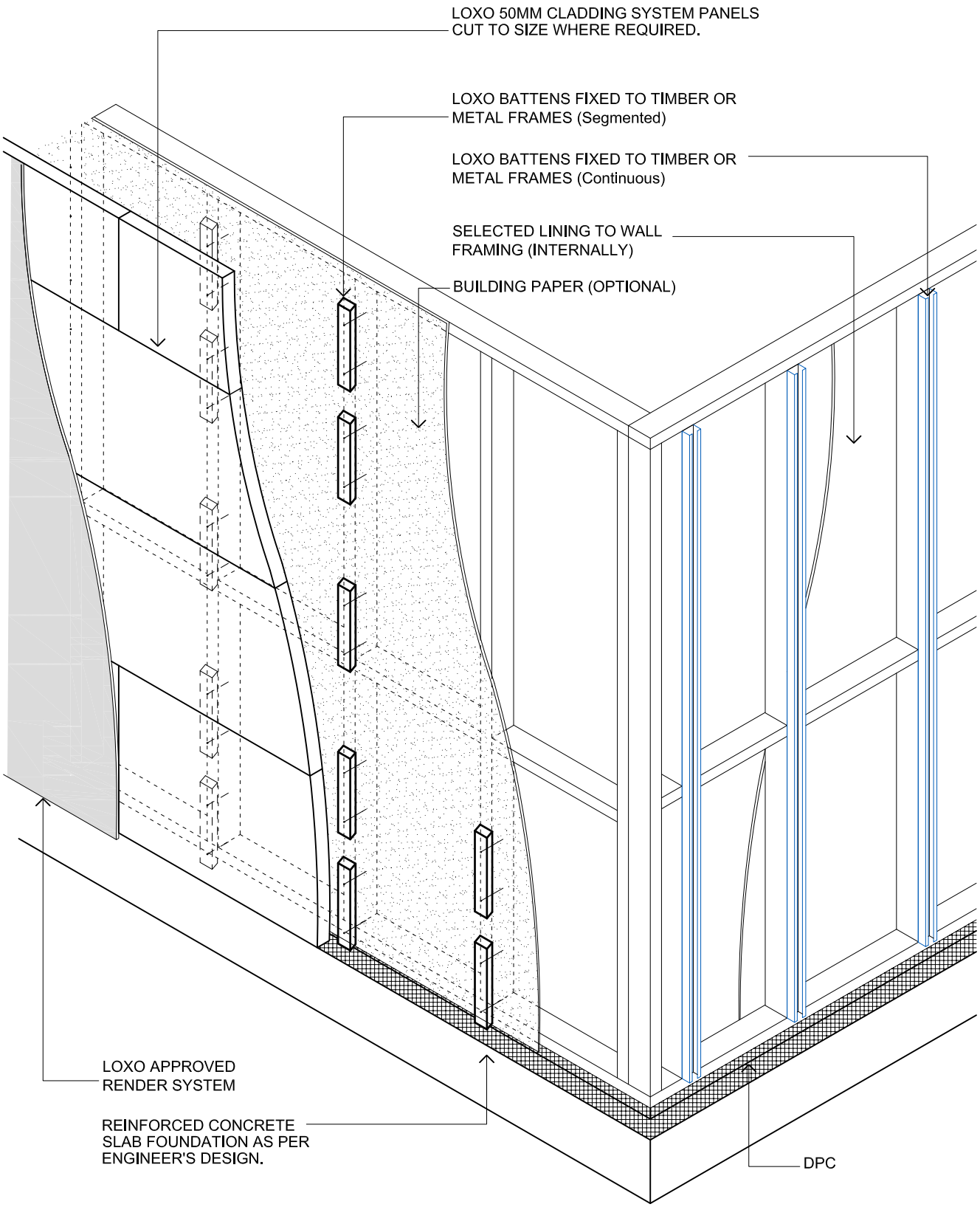
DENOTES PANEL SCREWS (50mm MIN. FROM PANEL EDGE)

BATTEN & PANEL SCREW SPACINGS

(WIND ZONE N5, C3 DEPICTED)

GENERAL ARRANGEMENT

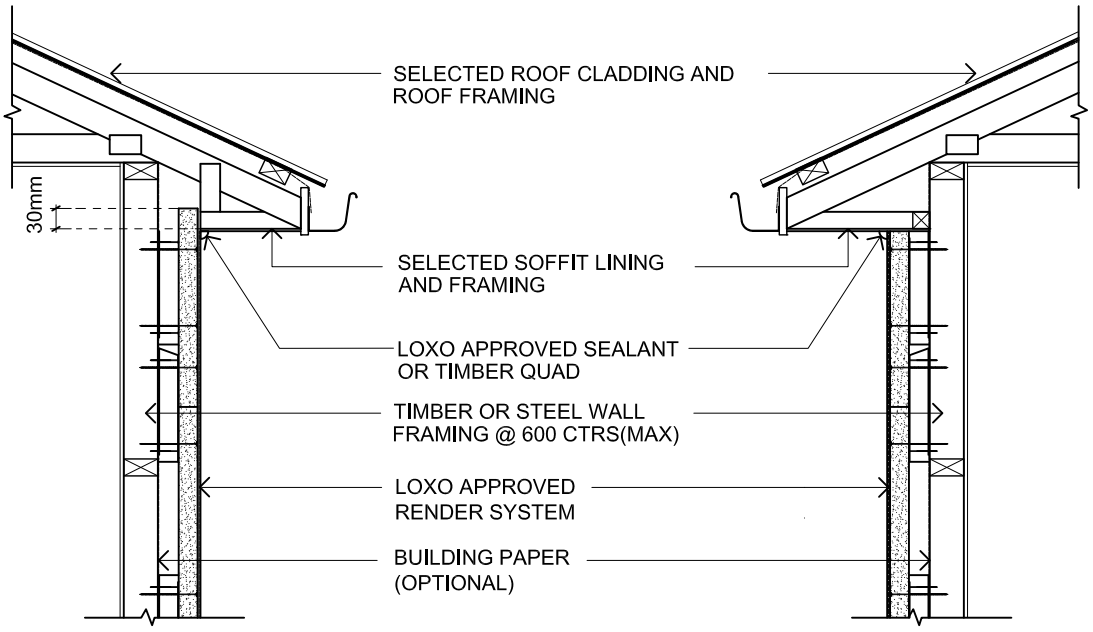
Det. 2.0
Scale 1:20



TIMBER OR METAL WALL FRAMING

LOXO EAVE DETAIL

Det. 3.0
Scale 1:20

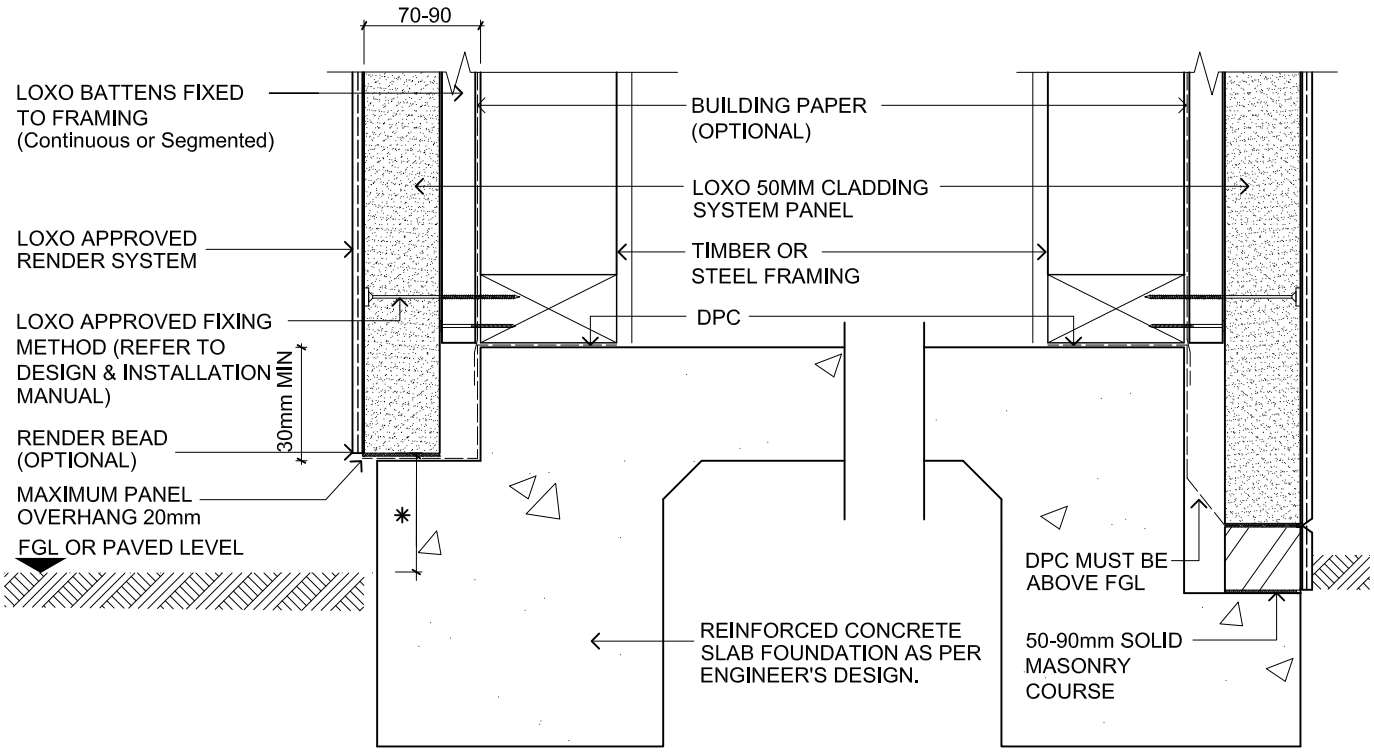


OPTION 1
(PANEL ABOVE EAVE)

OPTION 2
(PANEL BELOW EAVE)

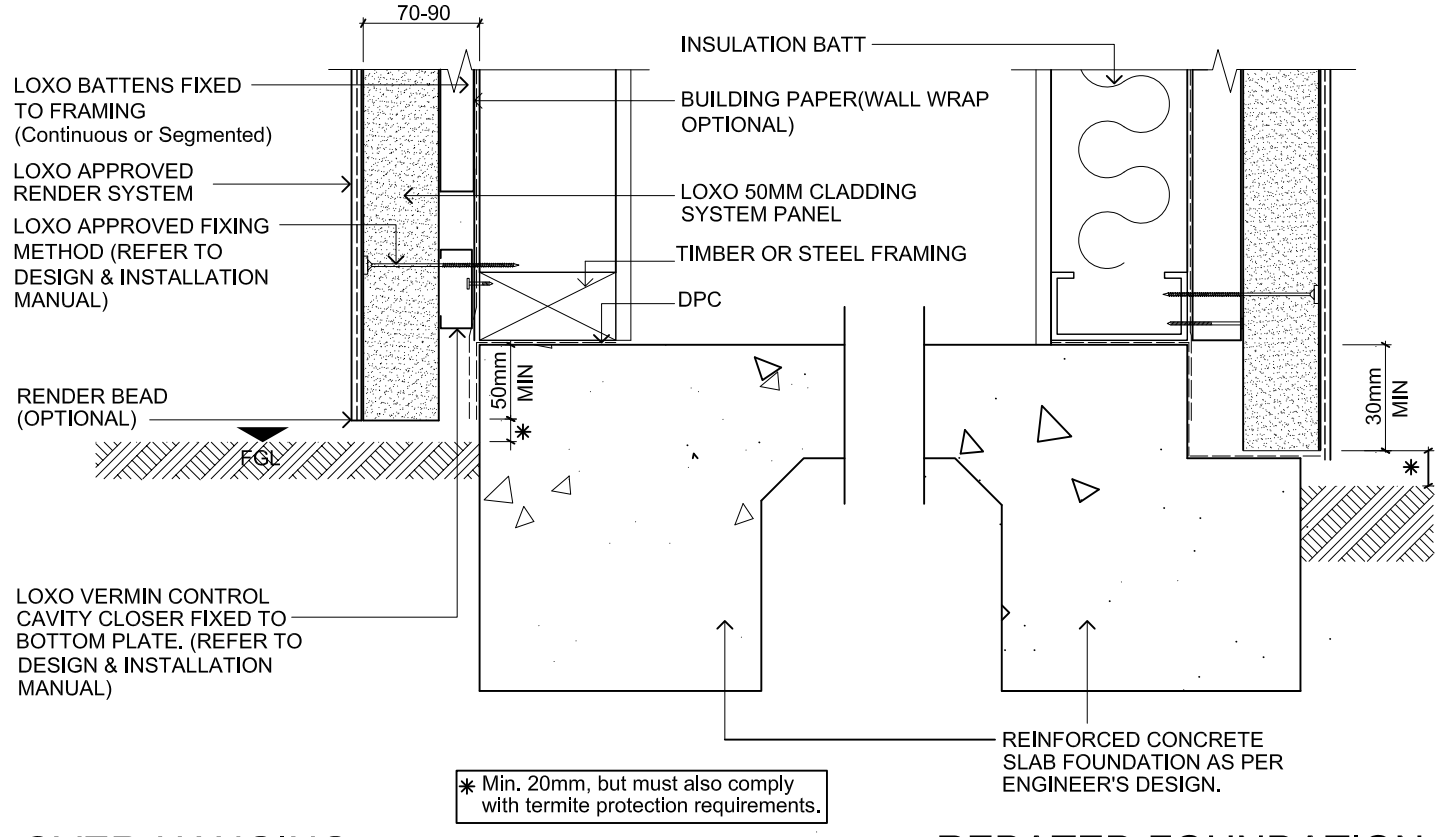
BASE DETAILS

Det. 4.0
Scale 1:5


70-90
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
BUILDING PAPER (OPTIONAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
TIMBER OR STEEL FRAMING
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
DPC
30mm MIN
RENDER BEAD (OPTIONAL)
MAXIMUM PANEL OVERHANG 20mm
FGL OR PAVED LEVEL
DPC MUST BE ABOVE FGL
REINFORCED CONCRETE SLAB FOUNDATION AS PER ENGINEER'S DESIGN.
50-90mm SOLID MASONRY COURSE

REBATED STEP-DOWN

REBATED STEP-DOWN WITH BRICK COURSE

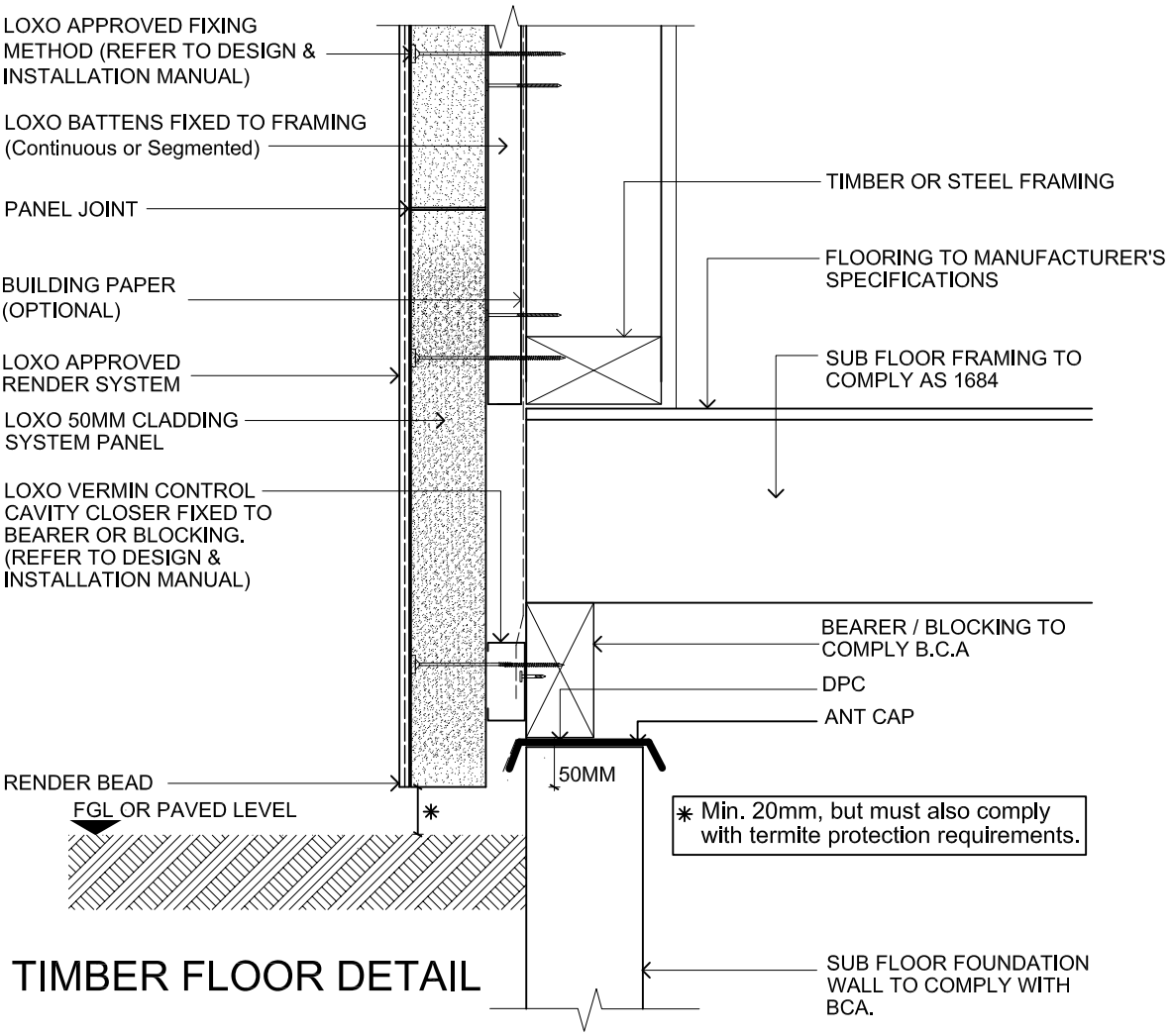

70-90
INSULATION BATT
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
BUILDING PAPER(WALL WRAP OPTIONAL)
LOXO APPROVED RENDER SYSTEM
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
TIMBER OR STEEL FRAMING
DPC
50mm MIN
30mm MIN
RENDER BEAD (OPTIONAL)
FGL
LOXO VERMIN CONTROL CAVITY CLOSER FIXED TO BOTTOM PLATE. (REFER TO DESIGN & INSTALLATION MANUAL)
REINFORCED CONCRETE SLAB FOUNDATION AS PER ENGINEER'S DESIGN.
* Min. 20mm, but must also comply with termite protection requirements.

OVER-HANGING

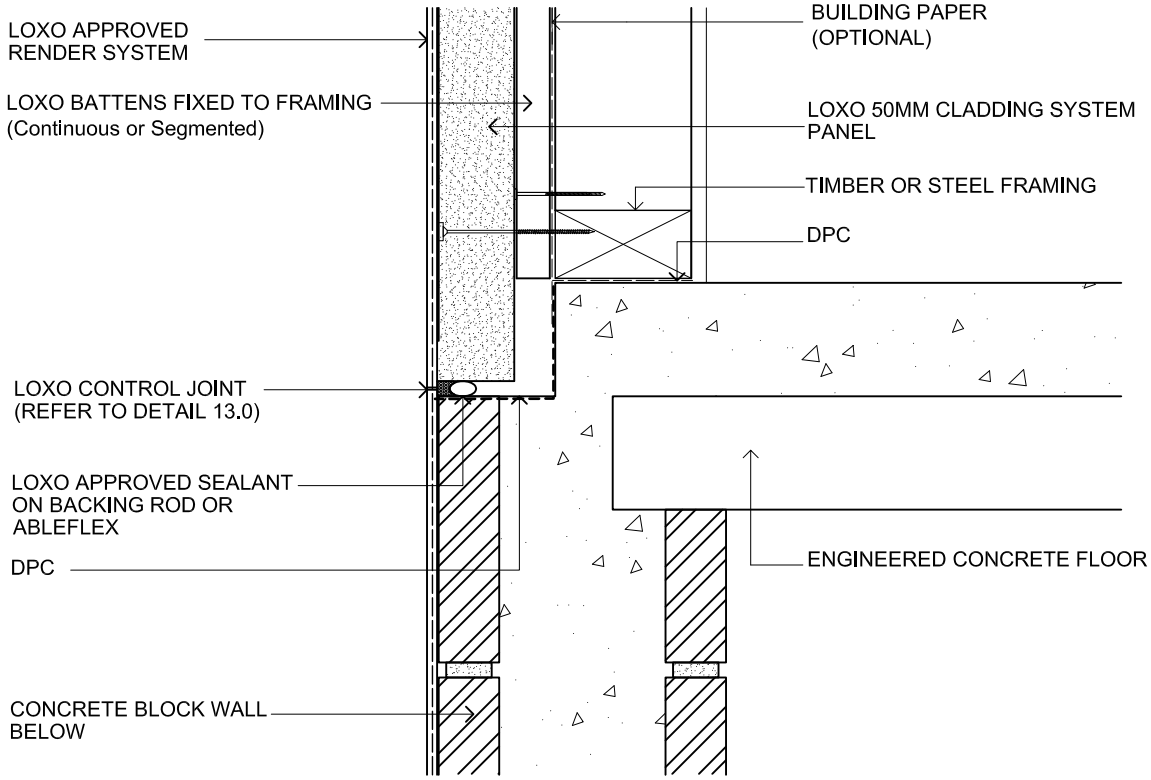
REBATED FOUNDATION

BASE DETAIL & INTER-FLOOR DETAIL

Det. 4.1
Scale 1:5


LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
PANEL JOINT
BUILDING PAPER (OPTIONAL)
LOXO APPROVED RENDER SYSTEM
LOXO 50MM CLADDING SYSTEM PANEL
LOXO VERMIN CONTROL CAVITY CLOSER FIXED TO BEARER OR BLOCKING. (REFER TO DESIGN & INSTALLATION MANUAL)
RENDER BEAD
FGL OR PAVED LEVEL
TIMBER OR STEEL FRAMING
FLOORING TO MANUFACTURER'S SPECIFICATIONS
SUB FLOOR FRAMING TO COMPLY AS 1684
BEARER / BLOCKING TO COMPLY B.C.A
DPC
ANT CAP
50MM
* Min. 20mm, but must also comply with termite protection requirements.
SUB FLOOR FOUNDATION WALL TO COMPLY WITH BCA.

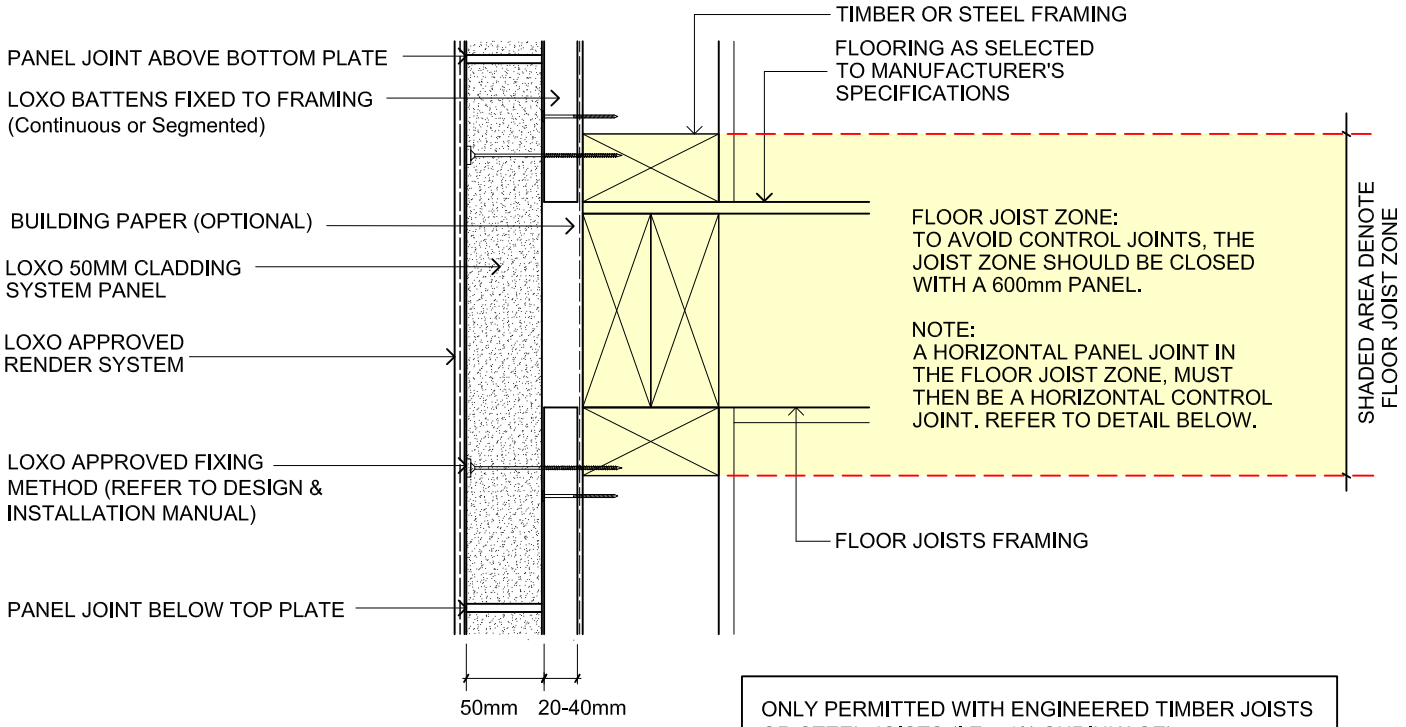
TIMBER FLOOR DETAIL


LOXO APPROVED RENDER SYSTEM
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO CONTROL JOINT (REFER TO DETAIL 13.0)
LOXO APPROVED SEALANT ON BACKING ROD OR ABLEFLEX
DPC
CONCRETE BLOCK WALL BELOW
BUILDING PAPER (OPTIONAL)
LOXO 50MM CLADDING SYSTEM PANEL
TIMBER OR STEEL FRAMING
DPC
ENGINEERED CONCRETE FLOOR

FIRST FLOOR CONCRETE DETAIL

INTER-FLOOR JOINT DETAIL

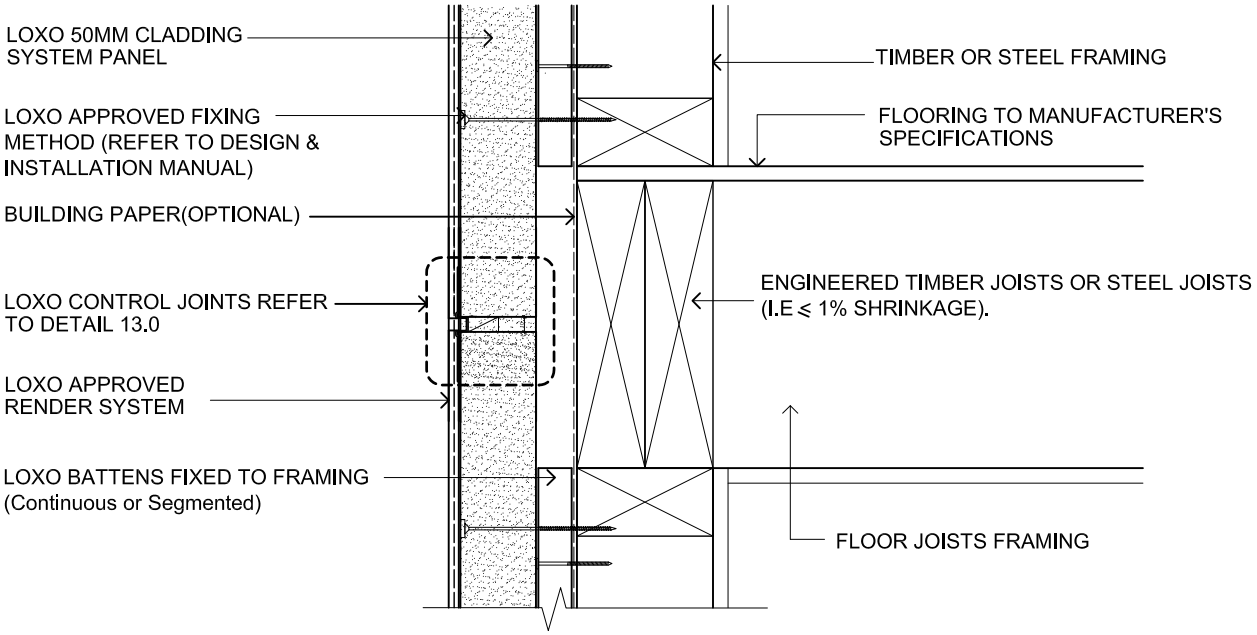
Det. 4.2
Scale 1:5


TIMBER OR STEEL FRAMING
FLOORING AS SELECTED TO MANUFACTURER'S SPECIFICATIONS
PANEL JOINT ABOVE BOTTOM PLATE
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
BUILDING PAPER (OPTIONAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
PANEL JOINT BELOW TOP PLATE
FLOOR JOIST ZONE:
TO AVOID CONTROL JOINTS, THE JOIST ZONE SHOULD BE CLOSED WITH A 600mm PANEL.
NOTE:
A HORIZONTAL PANEL JOINT IN THE FLOOR JOIST ZONE, MUST THEN BE A HORIZONTAL CONTROL JOINT. REFER TO DETAIL BELOW.
SHADED AREA DENOTE FLOOR JOIST ZONE
FLOOR JOISTS FRAMING
50mm
20-40mm

ONLY PERMITTED WITH ENGINEERED TIMBER JOISTS OR STEEL JOISTS (I.E ⩽ 1% SHRINKAGE).

FLOOR JOIST ZONE DETAIL

(CONTINUOUS PANEL IN FLOOR JOIST ZONE)


LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
BUILDING PAPER(OPTIONAL)
LOXO CONTROL JOINTS REFER TO DETAIL 13.0
LOXO APPROVED RENDER SYSTEM
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
TIMBER OR STEEL FRAMING
FLOORING TO MANUFACTURER'S SPECIFICATIONS
ENGINEERED TIMBER JOISTS OR STEEL JOISTS (I.E ⩽ 1% SHRINKAGE).
FLOOR JOISTS FRAMING

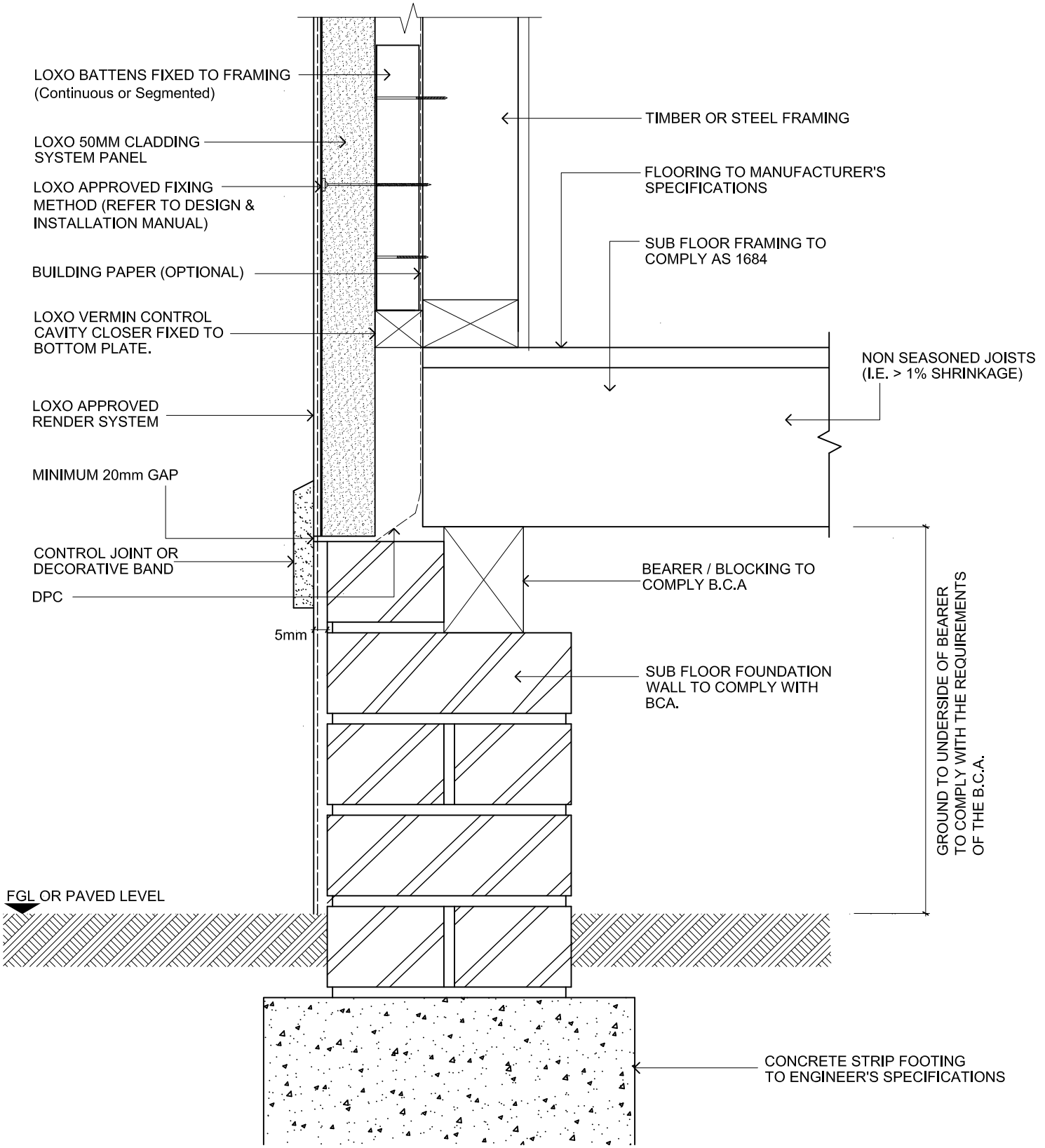
FLOOR JOIST ZONE DETAIL

(CONTROL JOINT IN FLOOR JOIST ZONE)

REQUIRED WHEN THE PANEL JOINT IS WITHIN THE FLOOR JOIST ZONE.

SUB-FLOOR DETAIL

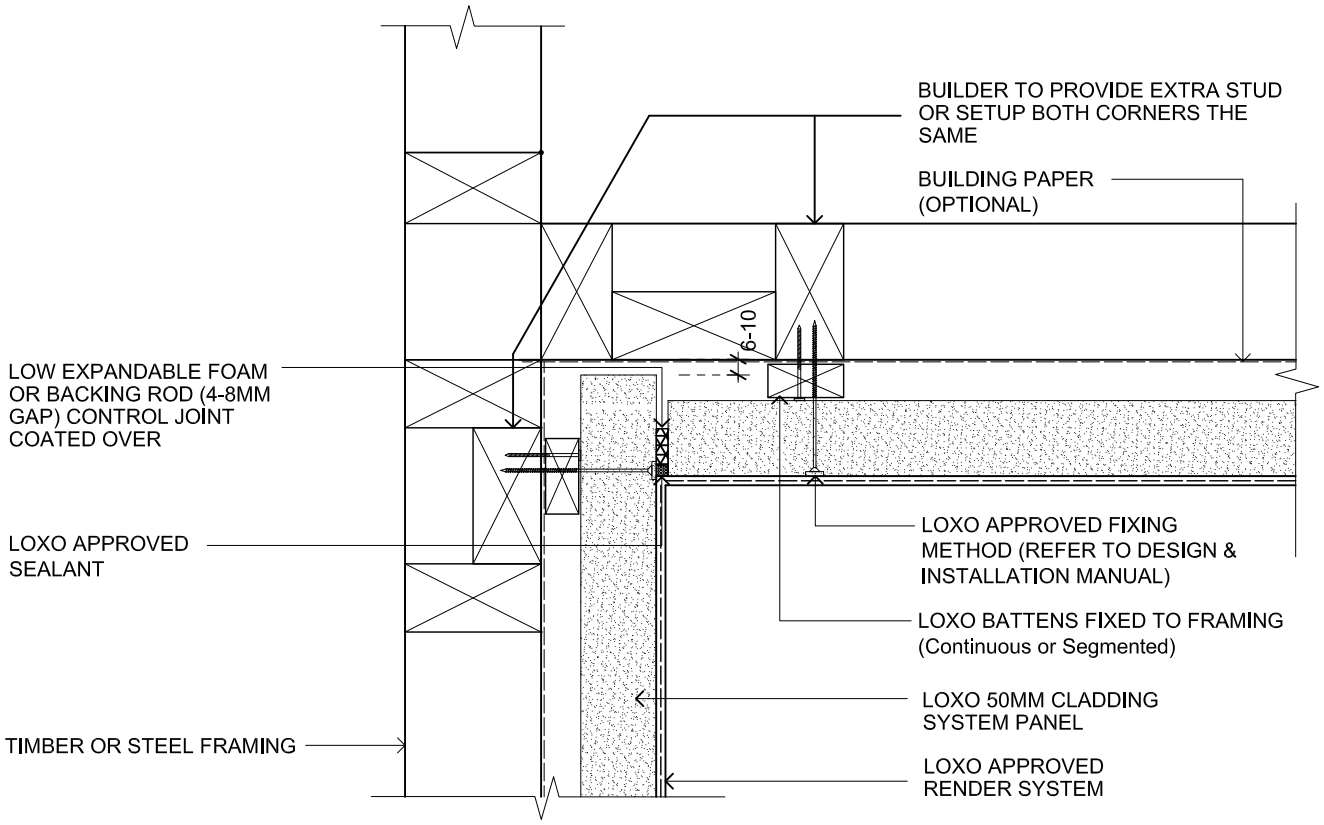
Det. 4.3
Scale 1:5



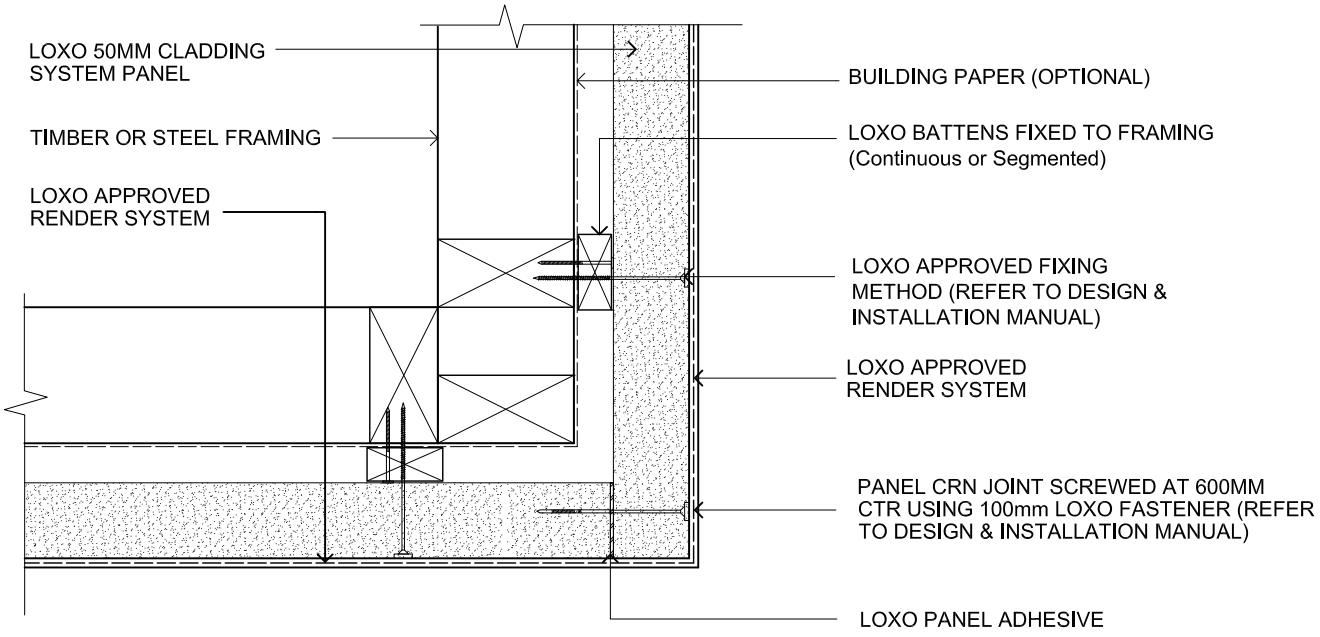
TIMBER SUB-FLOOR DETAIL

CORNER JUNCTION DETAIL

Det. 5.0
Scale 1:5


BUILDER TO PROVIDE EXTRA STUD OR SETUP BOTH CORNERS THE SAME
BUILDING PAPER (OPTIONAL)
16-10
LOW EXPANDABLE FOAM OR BACKING ROD (4-8MM GAP) CONTROL JOINT COATED OVER
LOXO APPROVED SEALANT
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO 50MM CLADDING SYSTEM PANEL
TIMBER OR STEEL FRAMING
LOXO APPROVED RENDER SYSTEM

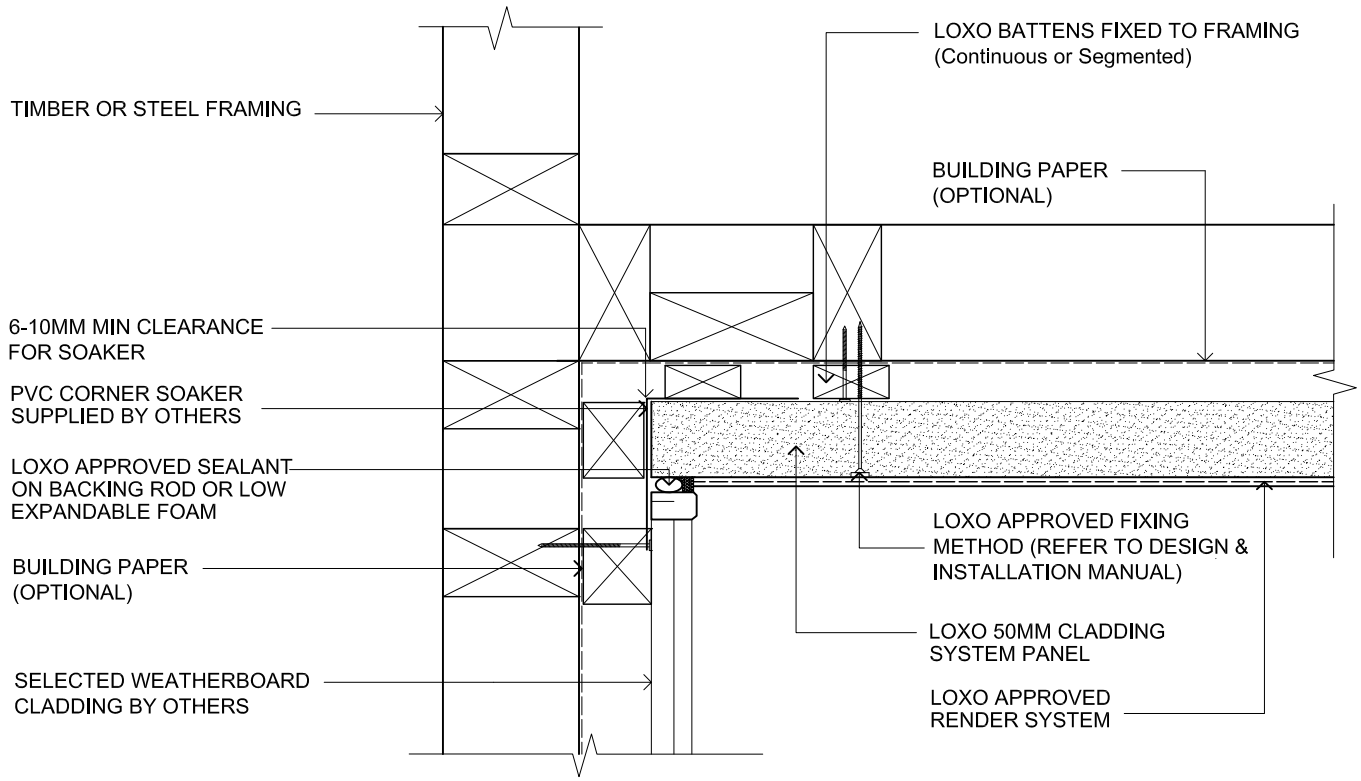
INTERNAL CORNER JUNCTION


LOXO 50MM CLADDING SYSTEM PANEL
BUILDING PAPER (OPTIONAL)
TIMBER OR STEEL FRAMING
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED RENDER SYSTEM
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED RENDER SYSTEM
PANEL CRN JOINT SCREWED AT 600MM CTR USING 100mm LOXO FASTENER (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO PANEL ADHESIVE

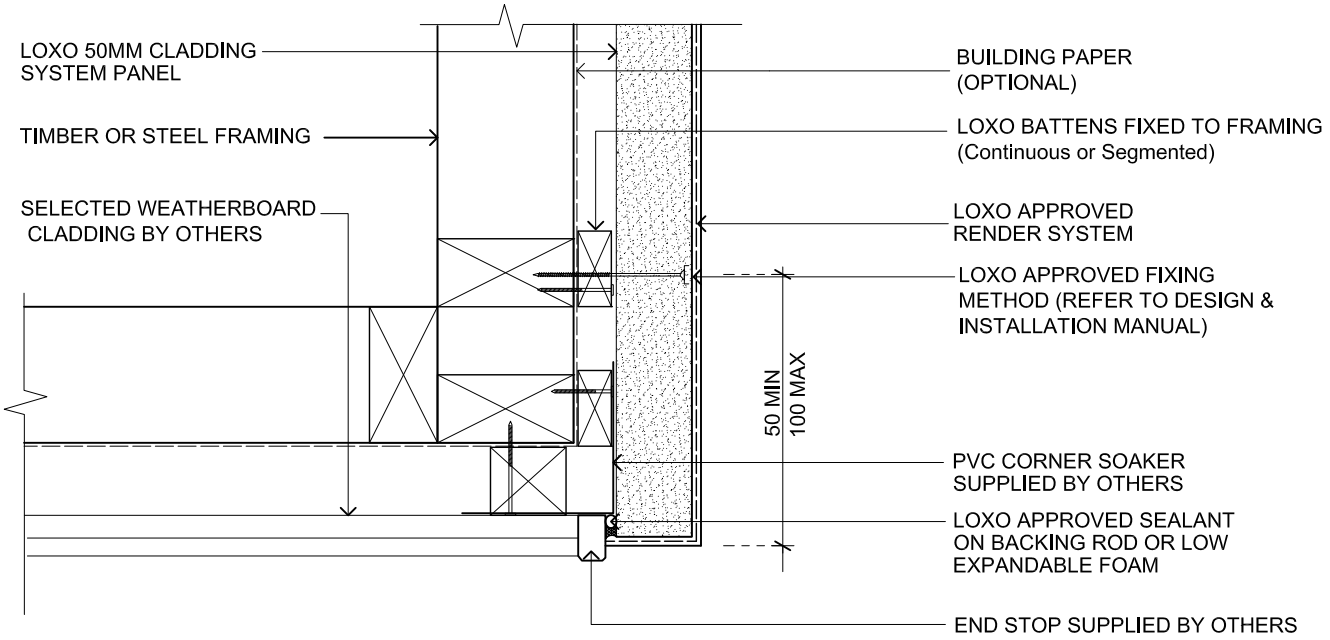
EXTERNAL CORNER JUNCTION

CORNER JUNCTION DETAILS

Det. 5.1
Scale 1:5



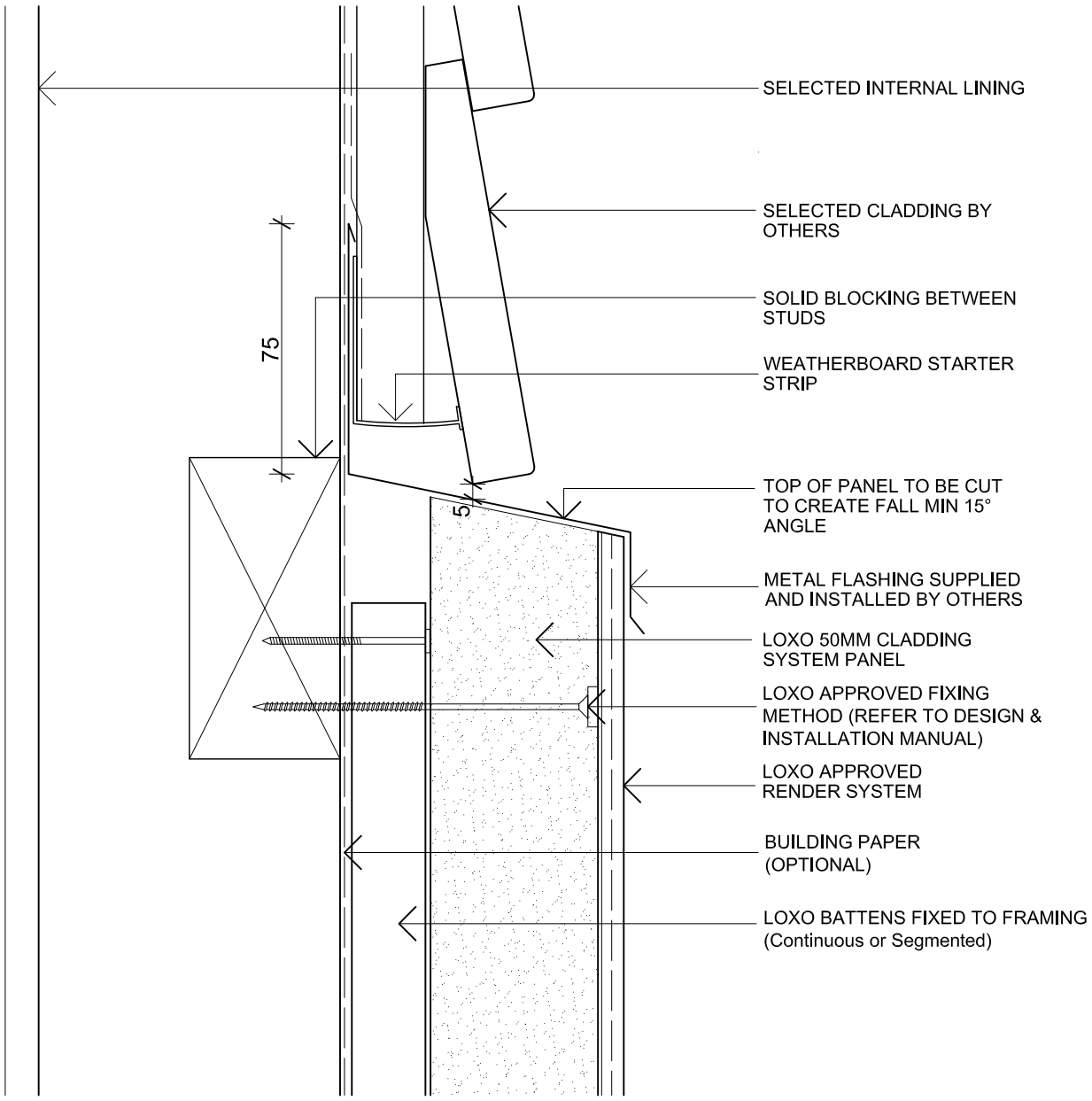
PANEL TO WEATHERBOARD
INTERNAL CORNER JUNCTION



PANEL TO WEATHERBOARD
EXTERNAL CORNER JUNCTION

CLADDING CHANGE DETAIL

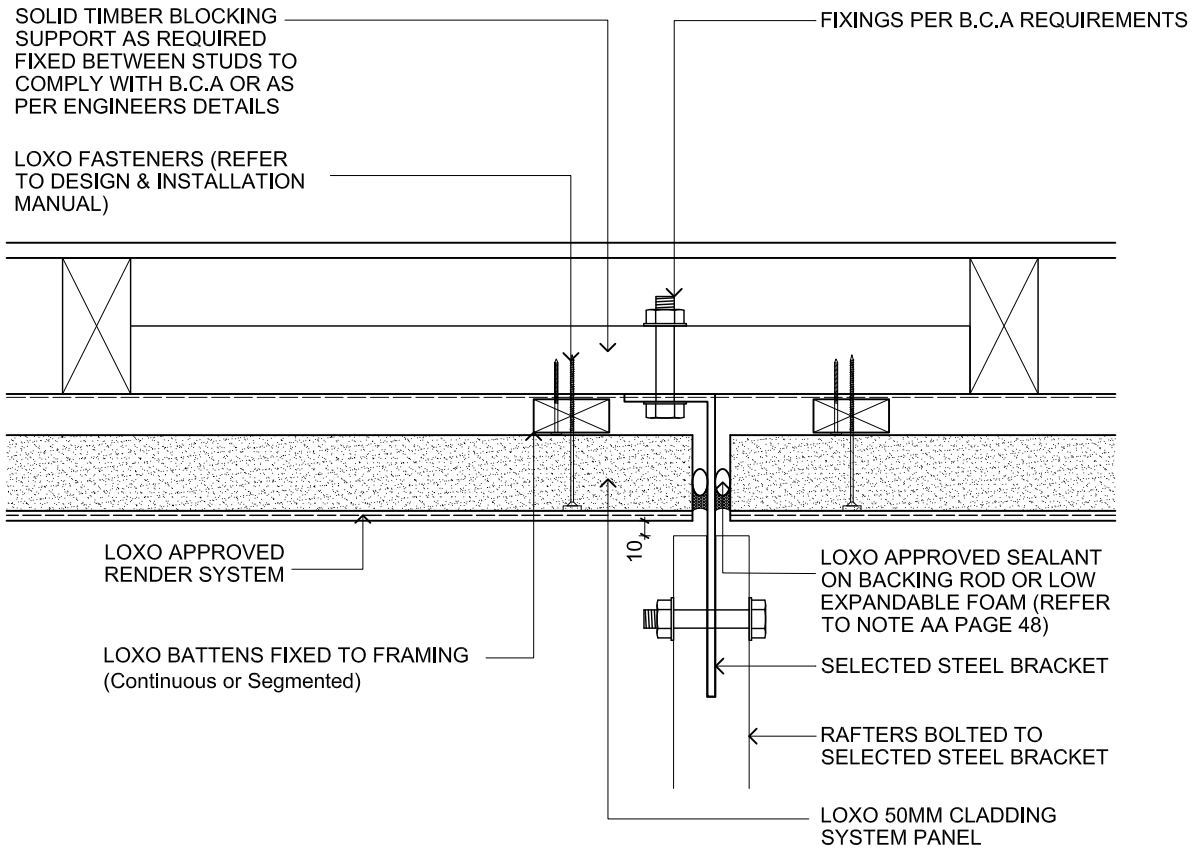
Det. 5.2
Scale 1:2


SELECTED INTERNAL LINING
SELECTED CLADDING BY OTHERS
SOLID BLOCKING BETWEEN STUDS
WEATHERBOARD STARTER STRIP
TOP OF PANEL TO BE CUT TO CREATE FALL MIN 15° ANGLE
METAL FLASHING SUPPLIED AND INSTALLED BY OTHERS
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED RENDER SYSTEM
BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
75
5

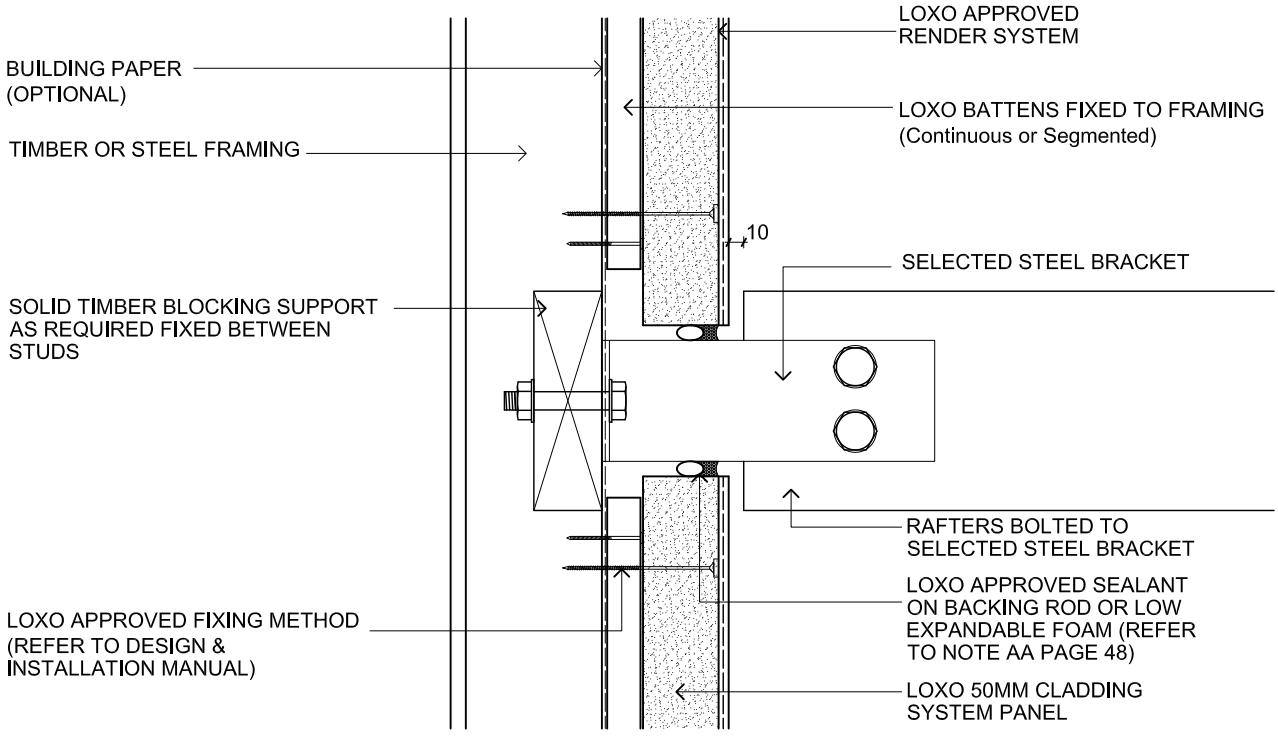
FIRST FLOOR CLADDING CHANGE DETAIL

BRACKET WALL DETAIL

Det. 6.0
Scale 1:5


SOLID TIMBER BLOCKING SUPPORT AS REQUIRED FIXED BETWEEN STUDS TO COMPLY WITH B.C.A OR AS PER ENGINEERS DETAILS
FIXINGS PER B.C.A REQUIREMENTS
LOXO FASTENERS (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED RENDER SYSTEM
10
LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE AA PAGE 48)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
SELECTED STEEL BRACKET
RAFTERS BOLTED TO SELECTED STEEL BRACKET
LOXO 50MM CLADDING SYSTEM PANEL

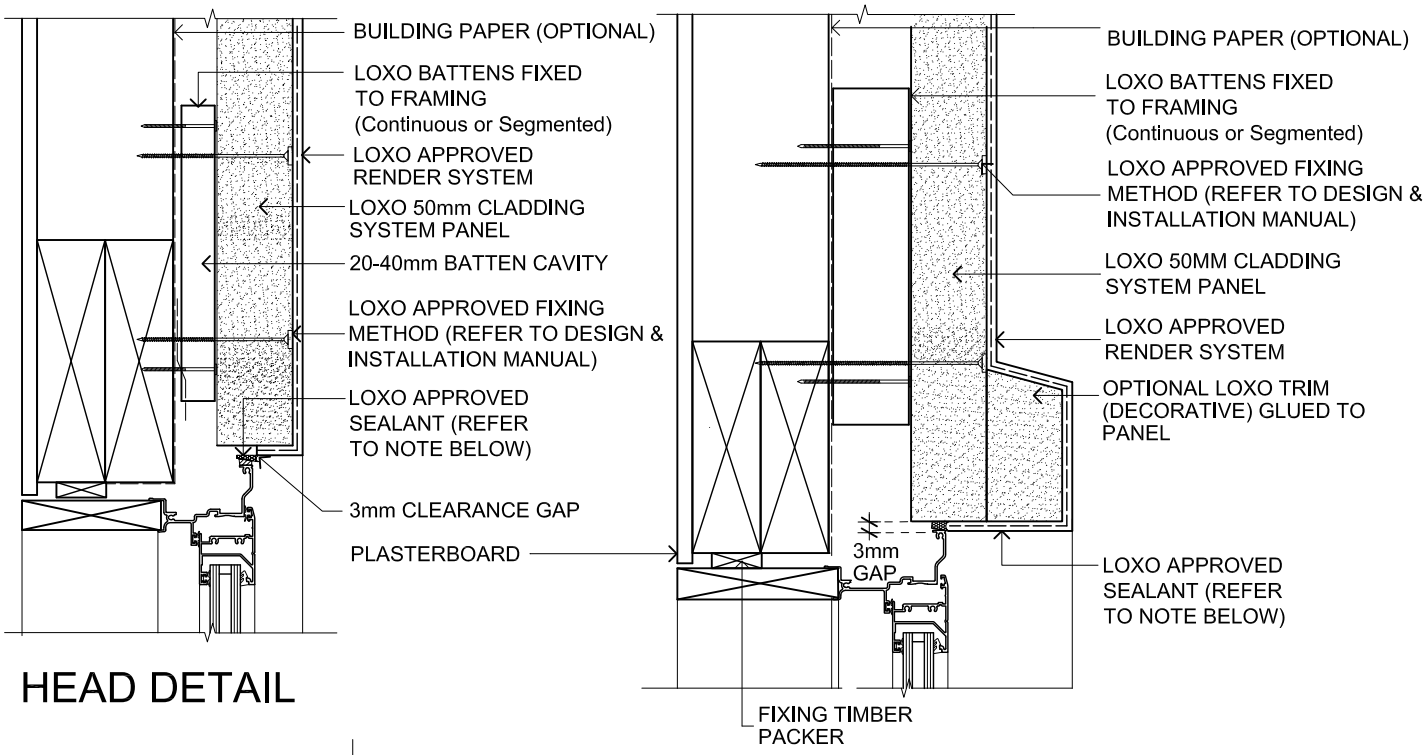
BRACKET / WALL JUNCTION PLAN


LOXO APPROVED RENDER SYSTEM
BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
TIMBER OR STEEL FRAMING
10
SELECTED STEEL BRACKET
SOLID TIMBER BLOCKING SUPPORT AS REQUIRED FIXED BETWEEN STUDS
RAFTERS BOLTED TO SELECTED STEEL BRACKET
LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE AA PAGE 48)
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO 50MM CLADDING SYSTEM PANEL

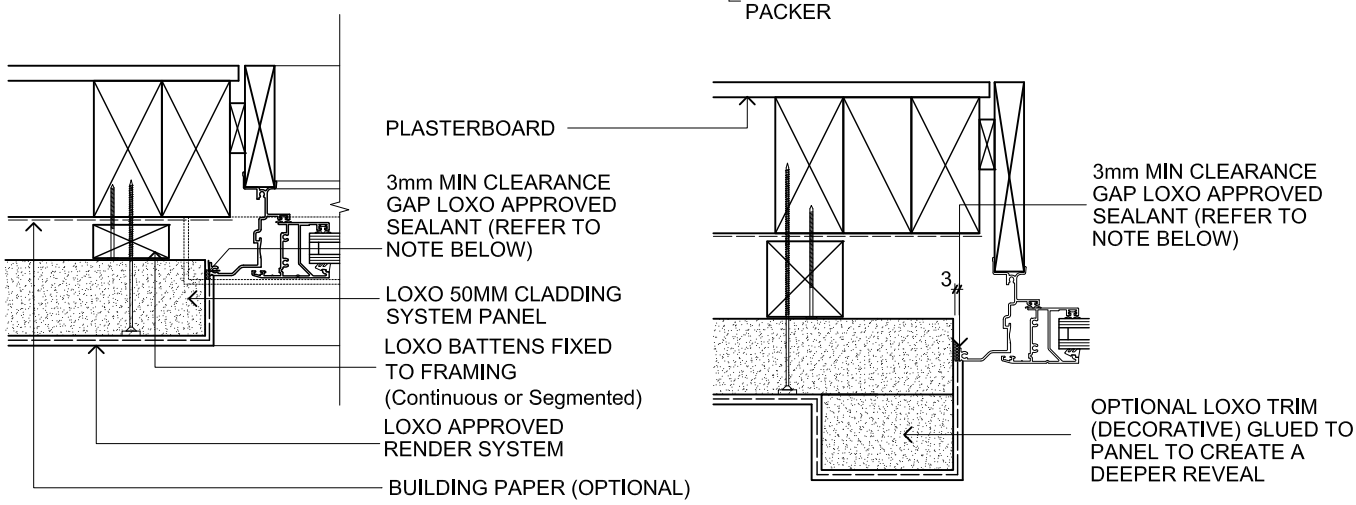
BRACKET / WALL JUNCTION SECTION

WINDOW & DOOR DETAIL

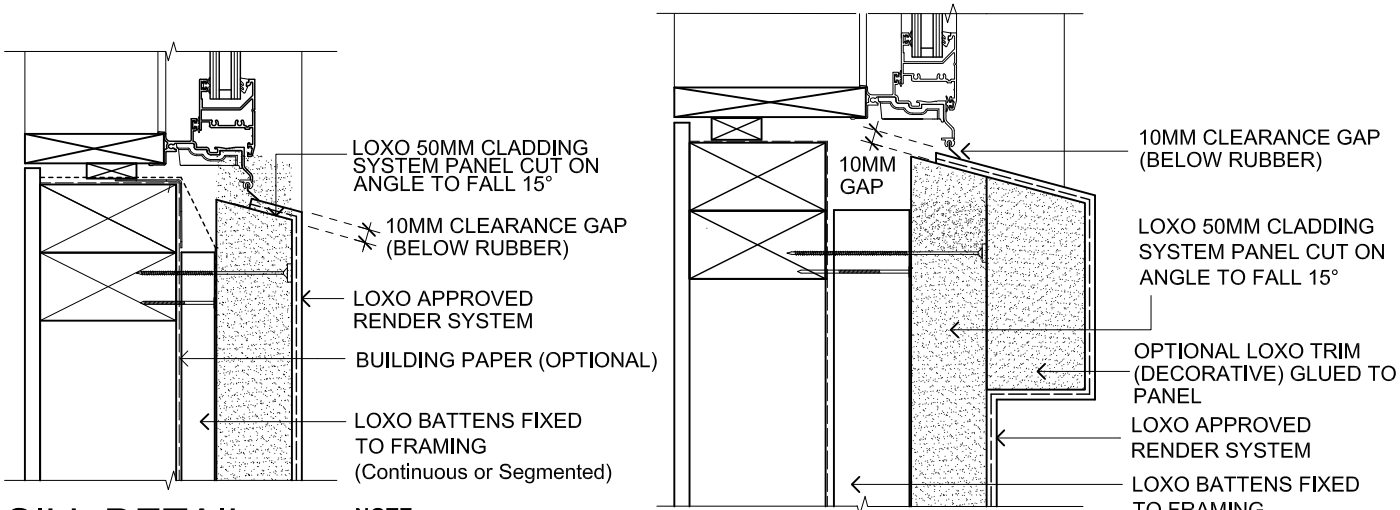
Det. 7.0
Scale 1:5


BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED RENDER SYSTEM
LOXO 50mm CLADDING SYSTEM PANEL
20-40mm BATTEN CAVITY
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED SEALANT (REFER TO NOTE BELOW)
3mm CLEARANCE GAP
PLASTERBOARD
BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
OPTIONAL LOXO TRIM (DECORATIVE) GLUED TO PANEL
3mm GAP
LOXO APPROVED SEALANT (REFER TO NOTE BELOW)
FIXING TIMBER PACKER

HEAD DETAIL


PLASTERBOARD
3mm MIN CLEARANCE GAP LOXO APPROVED SEALANT (REFER TO NOTE BELOW)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED RENDER SYSTEM
BUILDING PAPER (OPTIONAL)
3mm MIN CLEARANCE GAP LOXO APPROVED SEALANT (REFER TO NOTE BELOW)
3mm
OPTIONAL LOXO TRIM (DECORATIVE) GLUED TO PANEL TO CREATE A DEEPER REVEAL

JAMB DETAIL


LOXO 50MM CLADDING SYSTEM PANEL CUT ON ANGLE TO FALL 15°
10MM CLEARANCE GAP (BELOW RUBBER)
LOXO APPROVED RENDER SYSTEM
BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
10MM GAP
10MM CLEARANCE GAP (BELOW RUBBER)
LOXO 50MM CLADDING SYSTEM PANEL CUT ON ANGLE TO FALL 15°
OPTIONAL LOXO TRIM (DECORATIVE) GLUED TO PANEL
LOXO APPROVED RENDER SYSTEM
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)

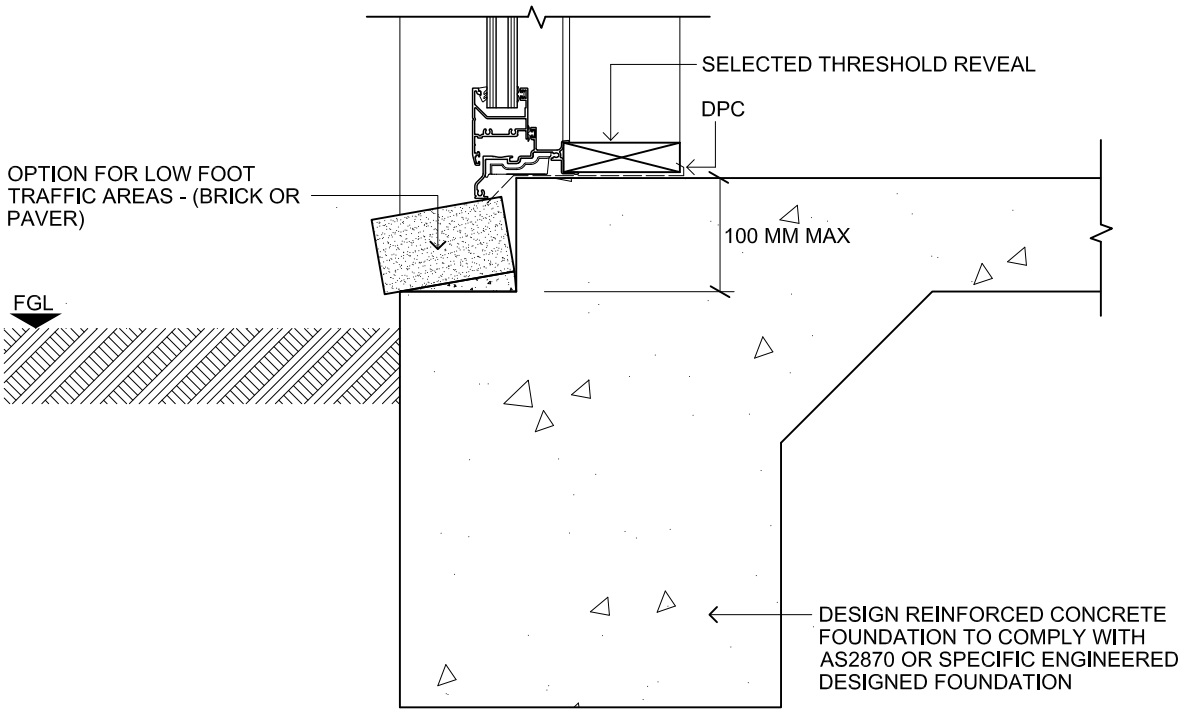
SILL DETAIL

NOTE:

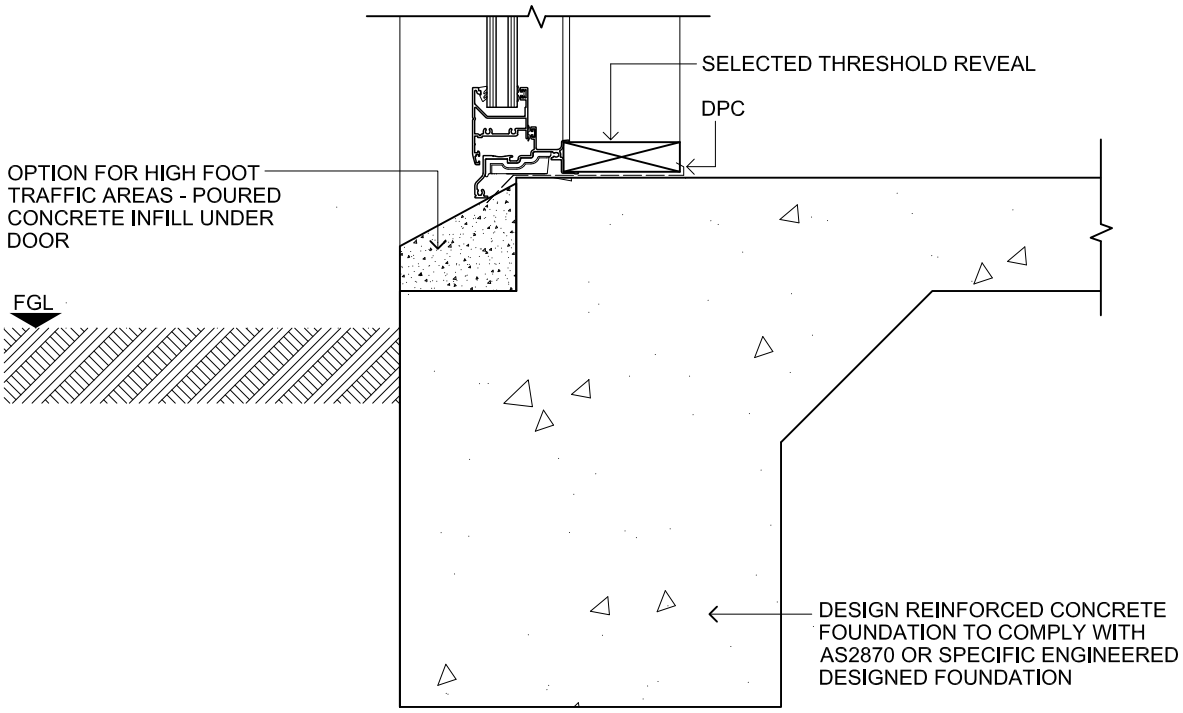
SEALANT REQUIRED AROUND DOOR AND WINDOWS IN COASTAL AREAS (≤ 1000M FROM WATER AND IN WIND ZONE (≥ N4, C2)

THRESHOLD DETAIL

Det. 8.0
Scale 1:5

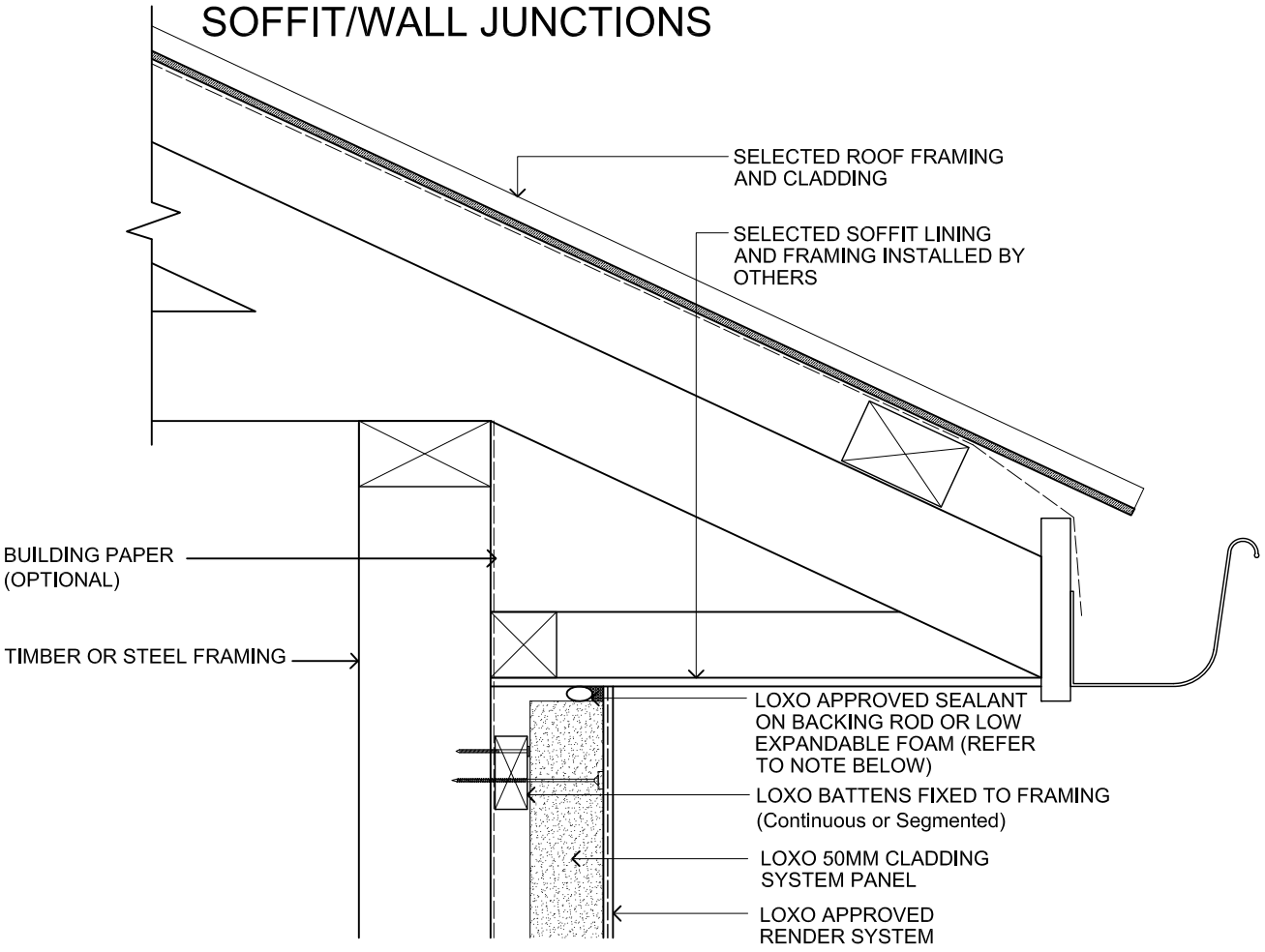

SELECTED THRESHOLD REVEAL
DPC
OPTION FOR LOW FOOT TRAFFIC AREAS - (BRICK OR PAVER)
100 MM MAX
FGL
DESIGN REINFORCED CONCRETE FOUNDATION TO COMPLY WITH AS2870 OR SPECIFIC ENGINEERED DESIGNED FOUNDATION

OPTION A


SELECTED THRESHOLD REVEAL
DPC
OPTION FOR HIGH FOOT TRAFFIC AREAS - POURED CONCRETE INFILL UNDER DOOR
FGL
DESIGN REINFORCED CONCRETE FOUNDATION TO COMPLY WITH AS2870 OR SPECIFIC ENGINEERED DESIGNED FOUNDATION

OPTION B

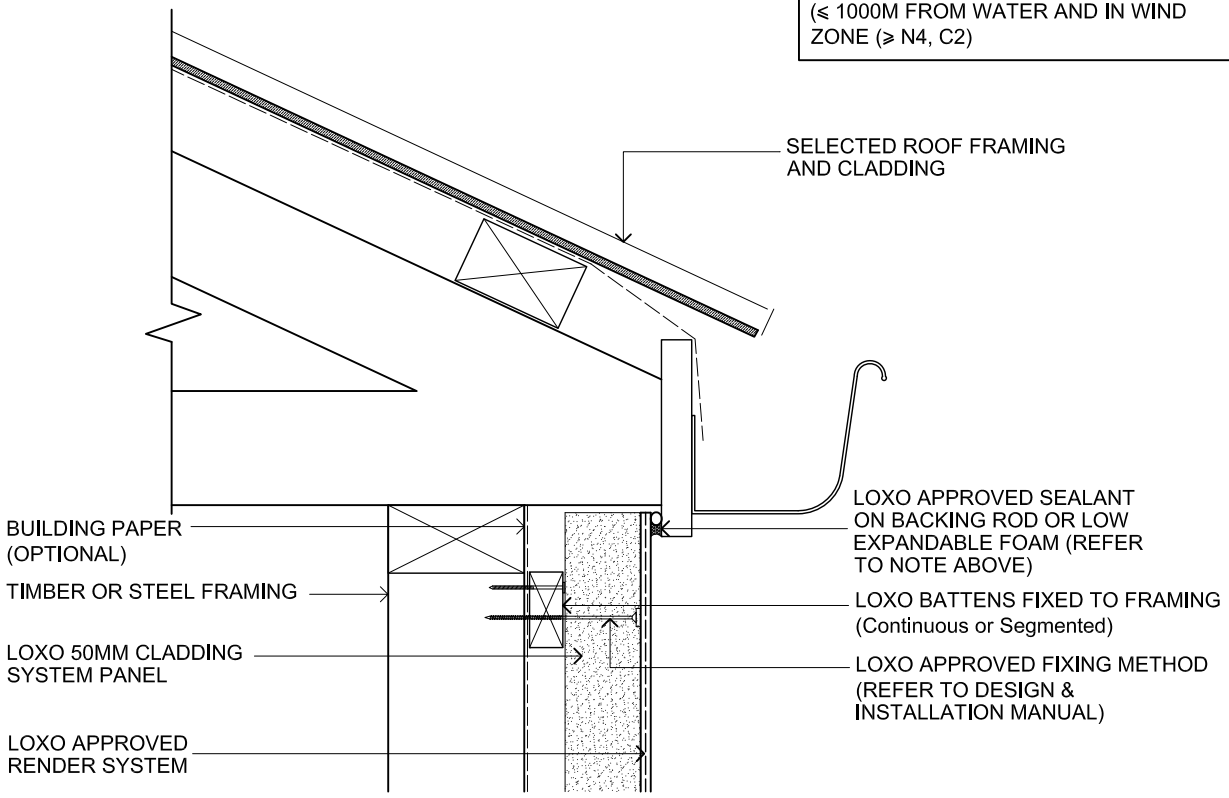
SOFFIT/WALL JUNCTIONS


SELECTED ROOF FRAMING AND CLADDING
SELECTED SOFFIT LINING AND FRAMING INSTALLED BY OTHERS
BUILDING PAPER (OPTIONAL)
TIMBER OR STEEL FRAMING
LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE BELOW)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM

SOFFIT / WALL JUNCTION

NOTE:

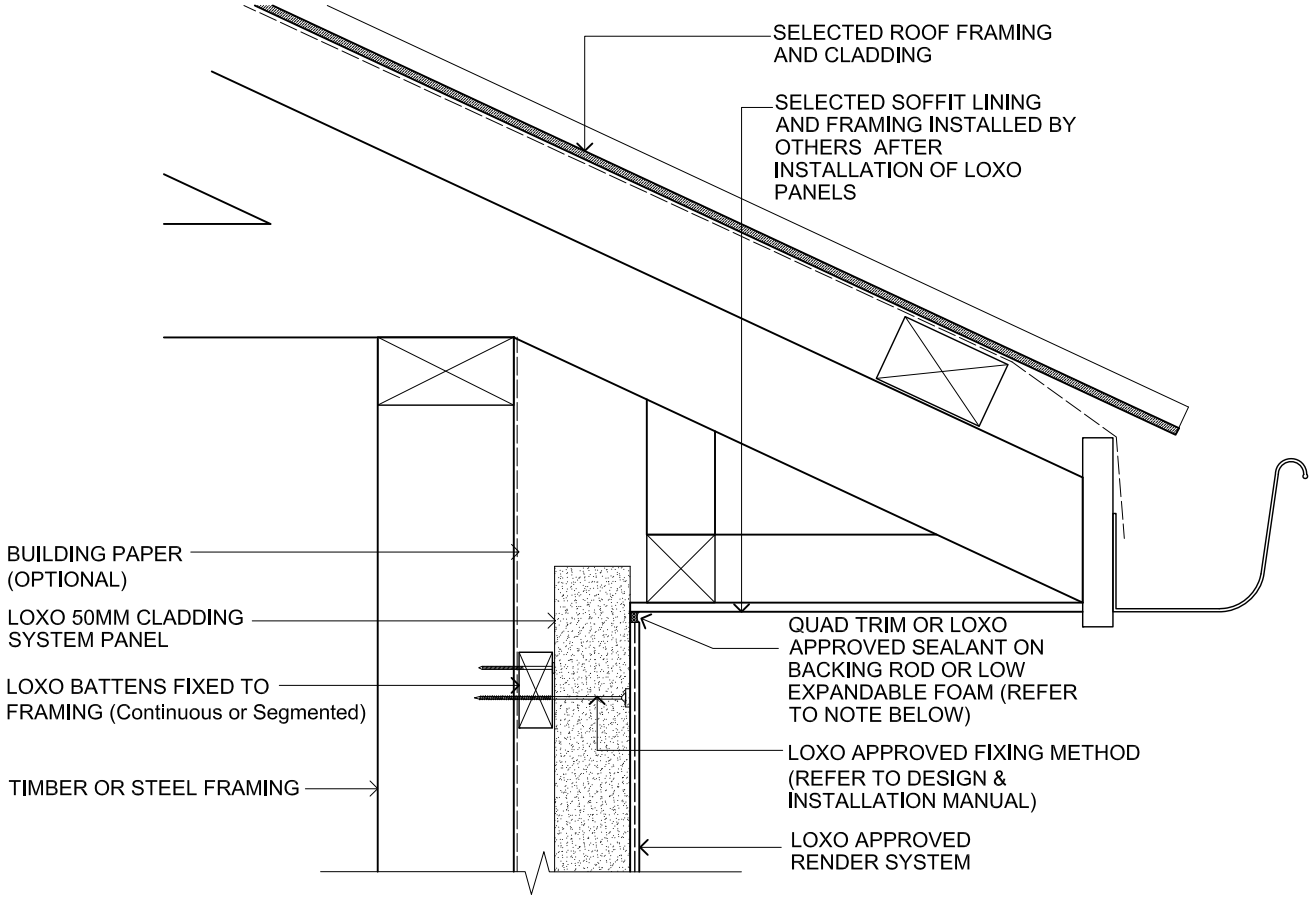
SEALANT REQUIRED IN COASTAL AREAS (⩽ 1000M FROM WATER AND IN WIND ZONE (⩾ N4, C2)


SELECTED ROOF FRAMING AND CLADDING
BUILDING PAPER (OPTIONAL)
TIMBER OR STEEL FRAMING
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE ABOVE)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)

SOFFIT / WALL JUNCTION

SOFFIT/WALL JUNCTION AND ROOF/WALL JUNCTION

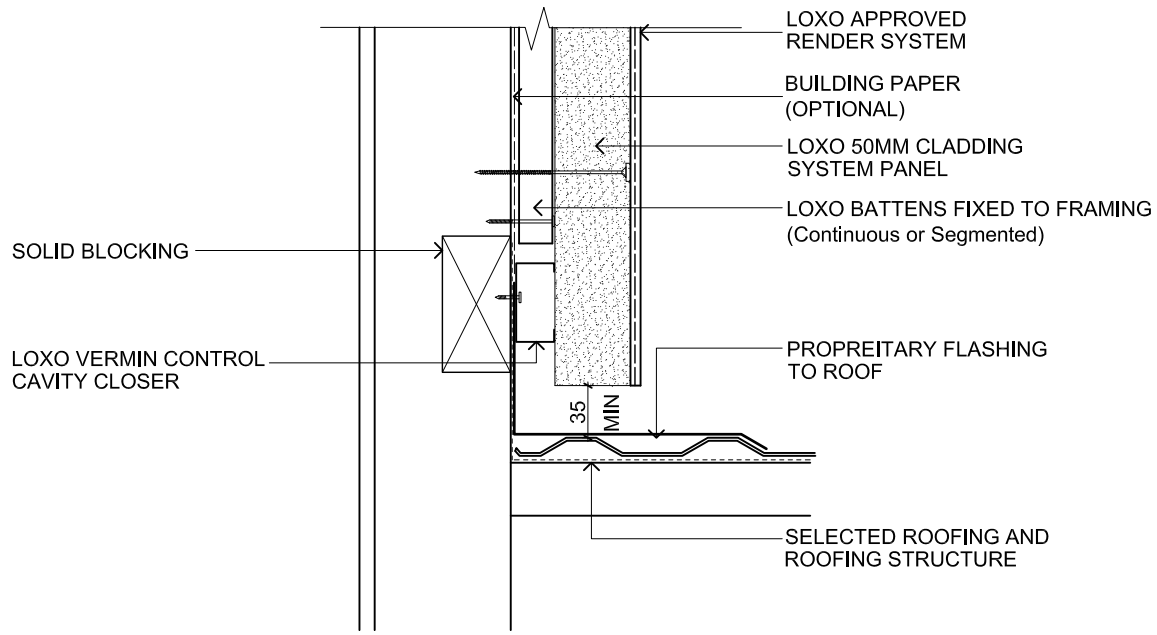
Det. 9.1
Scale 1:5


SELECTED ROOF FRAMING AND CLADDING
SELECTED SOFFIT LINING AND FRAMING INSTALLED BY OTHERS AFTER INSTALLATION OF LOXO PANELS
BUILDING PAPER (OPTIONAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
TIMBER OR STEEL FRAMING
QUAD TRIM OR LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE BELOW)
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED RENDER SYSTEM

SOFFIT / WALL JUNCTION

NOTE:

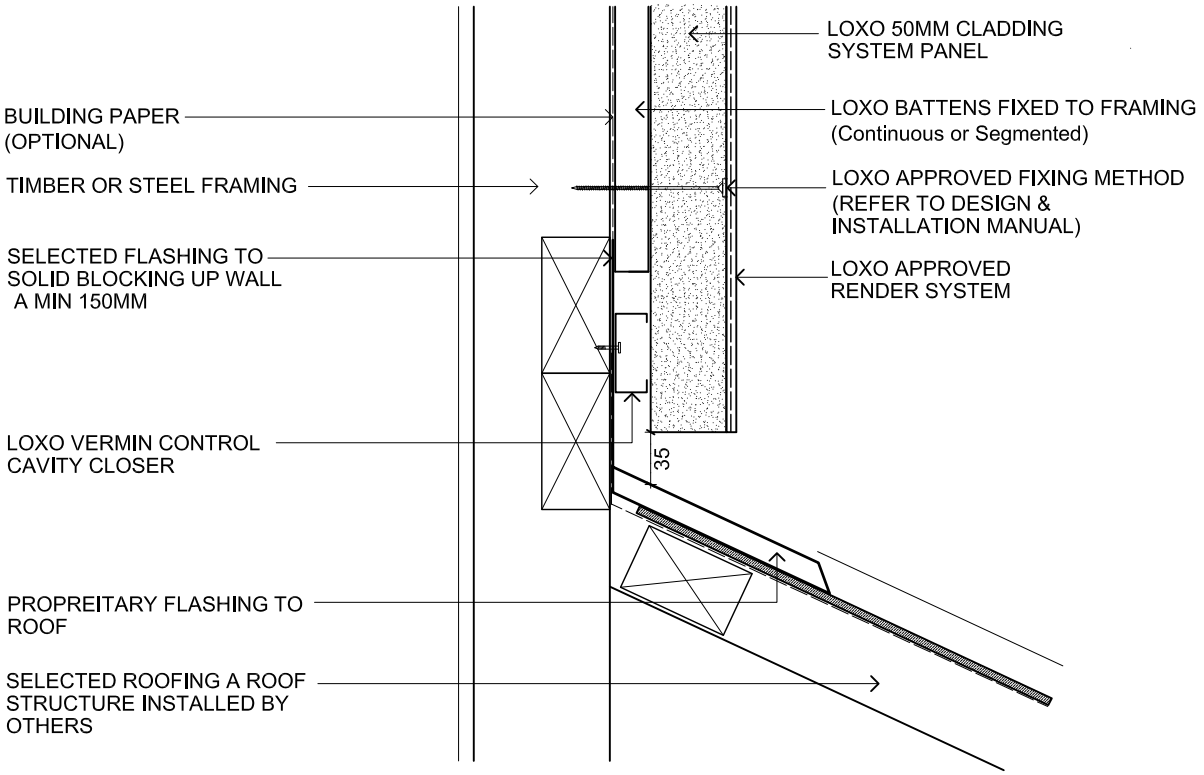
SEALANT REQUIRED IN COASTAL AREAS (≤ 1000M FROM WATER AND IN WIND ZONE (≥ N4, C2)


LOXO APPROVED RENDER SYSTEM
BUILDING PAPER (OPTIONAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
SOLID BLOCKING
LOXO VERMIN CONTROL CAVITY CLOSER
35 MIN
PROPREITARY FLASHING TO ROOF
SELECTED ROOFING AND ROOFING STRUCTURE

ROOF / WALL JUNCTION

SOFFIT/WALL JUNCTION AND ROOF/WALL JUNCTION

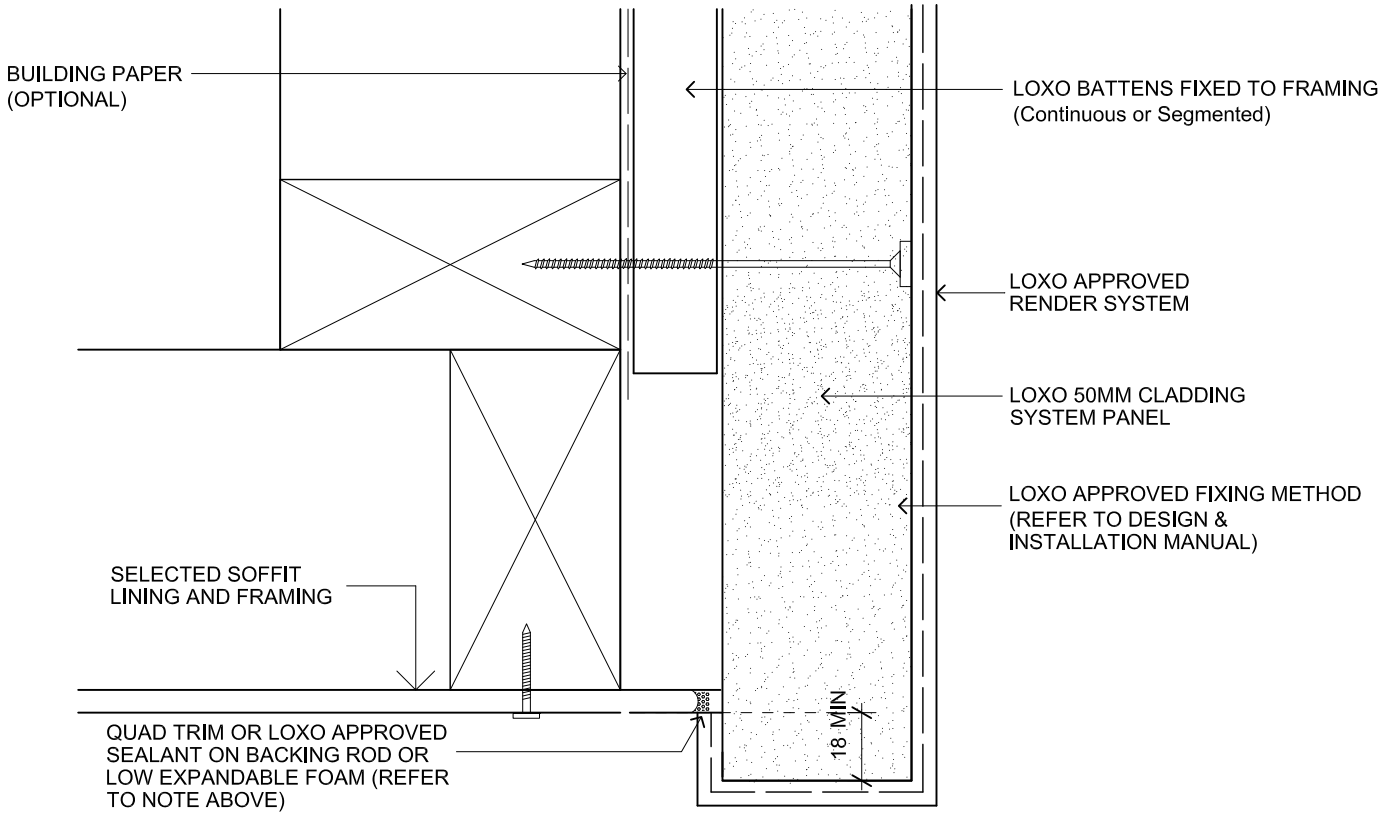
Det. 9.2
Scale 1:5


LOXO 50MM CLADDING SYSTEM PANEL
BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
TIMBER OR STEEL FRAMING
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
SELECTED FLASHING TO SOLID BLOCKING UP WALL A MIN 150MM
LOXO APPROVED RENDER SYSTEM
LOXO VERMIN CONTROL CAVITY CLOSER
35
PROPREITARY FLASHING TO ROOF
SELECTED ROOFING A ROOF STRUCTURE INSTALLED BY OTHERS

ROOF / WALL JUNCTION

NOTE:

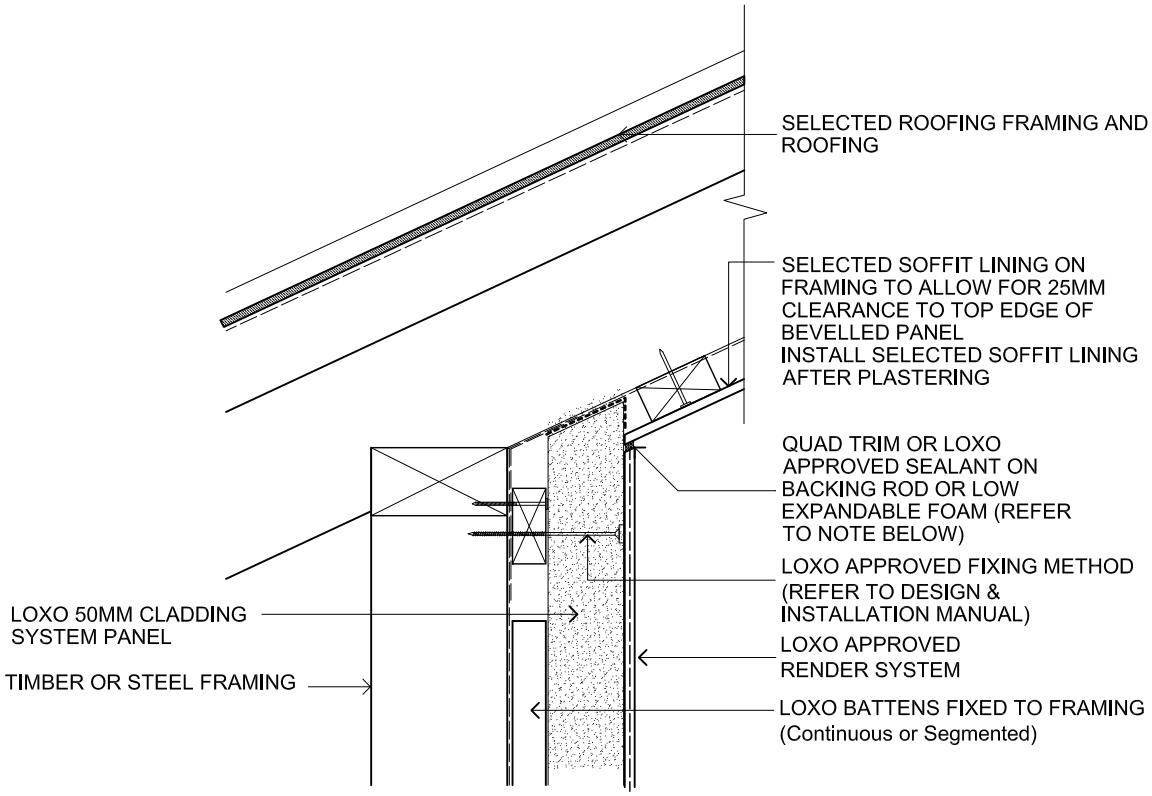
SEALANT REQUIRED IN COASTAL AREAS (≤ 1000M FROM WATER AND IN WIND ZONE (≥ N4, C2)


BUILDING PAPER (OPTIONAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
LOXO APPROVED RENDER SYSTEM
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
SELECTED SOFFIT LINING AND FRAMING
18 MIN
QUAD TRIM OR LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE ABOVE)

SOFFIT / WALL JUNCTION

EXPOSED SOFFIT/WALL JUNCTION

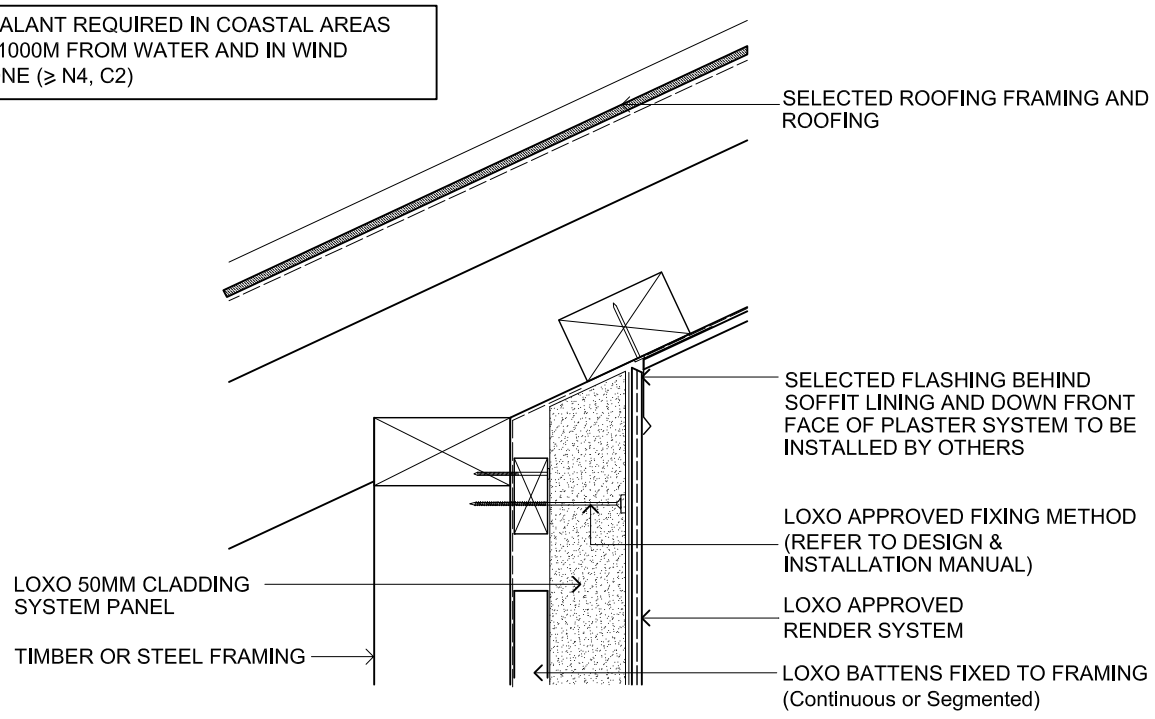
Det. 9.3
Scale 1:5


SELECTED ROOFING FRAMING AND ROOFING
SELECTED SOFFIT LINING ON FRAMING TO ALLOW FOR 25MM CLEARANCE TO TOP EDGE OF BEVELLED PANEL
INSTALL SELECTED SOFFIT LINING AFTER PLASTERING
QUAD TRIM OR LOXO APPROVED SEALANT ON BACKING ROD OR LOW EXPANDABLE FOAM (REFER TO NOTE BELOW)
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
TIMBER OR STEEL FRAMING
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)

MONOPITCHED EXPOSED SOFFIT / WALL JUNCTION

NOTE:

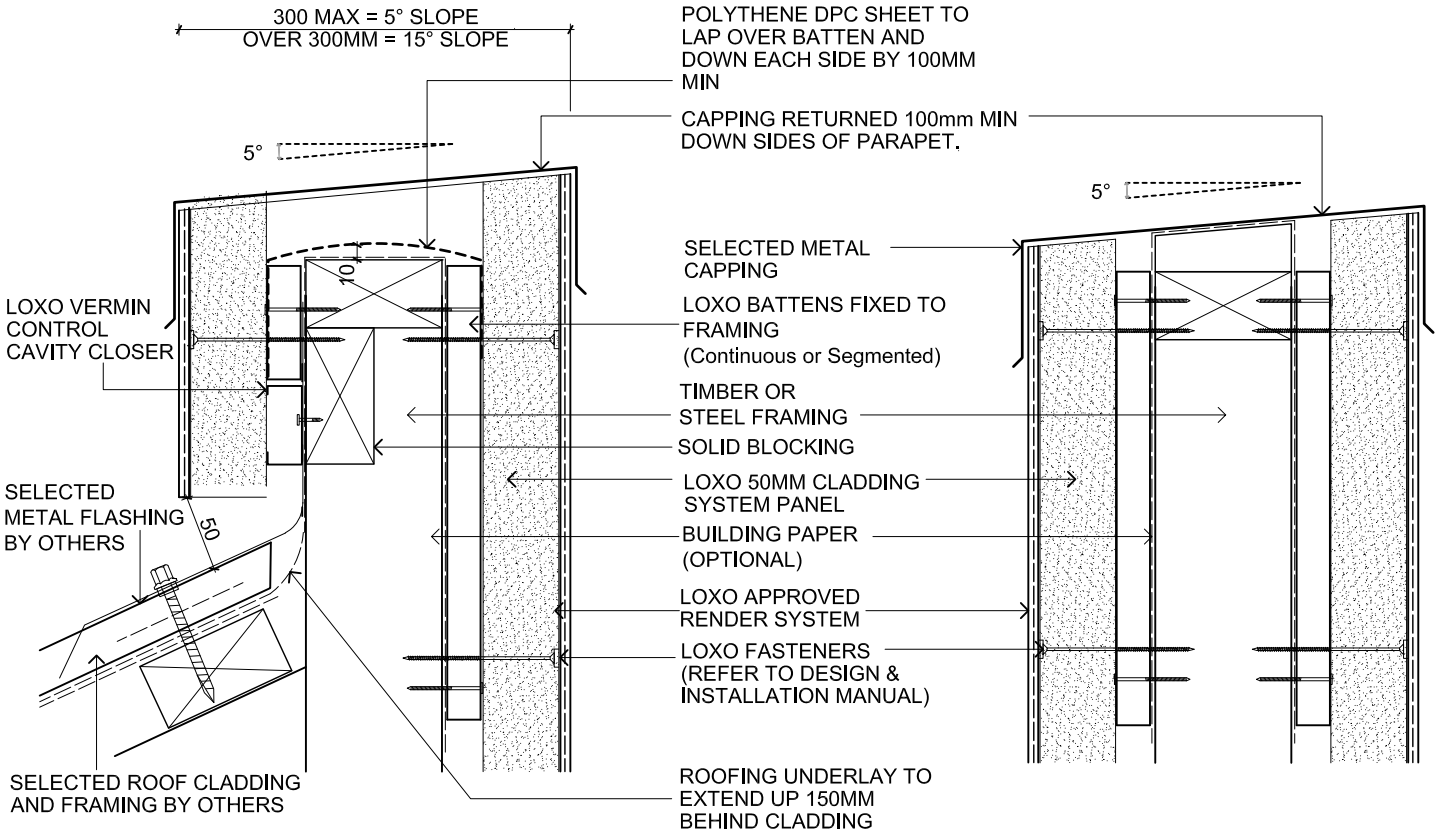
SEALANT REQUIRED IN COASTAL AREAS (≤ 1000M FROM WATER AND IN WIND ZONE (≥ N4, C2)

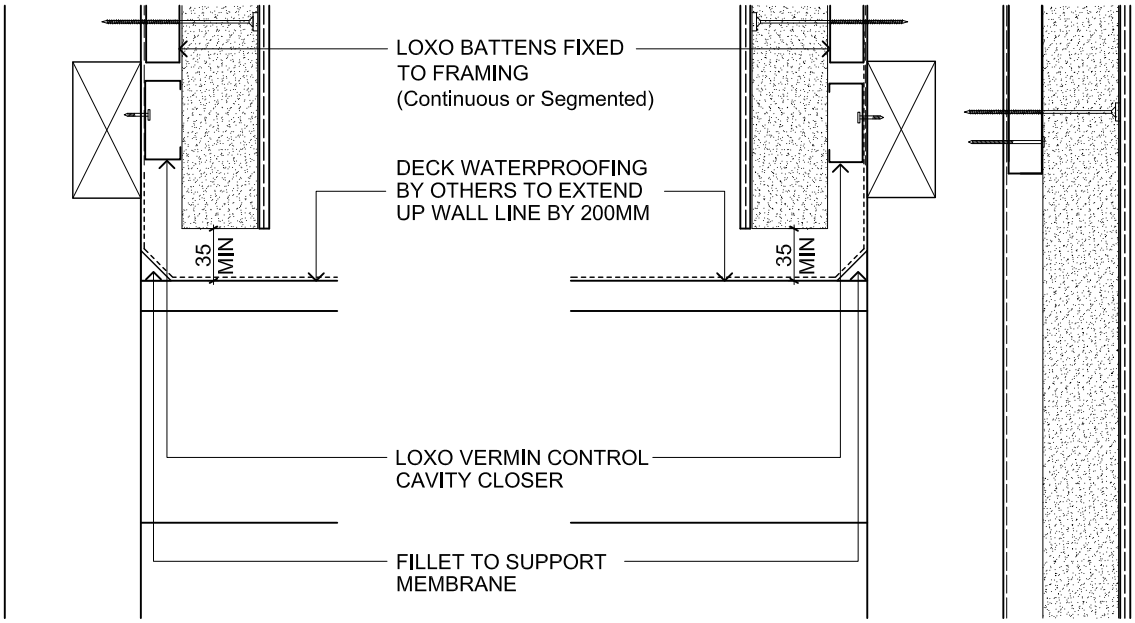

SELECTED ROOFING FRAMING AND ROOFING
SELECTED FLASHING BEHIND SOFFIT LINING AND DOWN FRONT FACE OF PLASTER SYSTEM TO BE INSTALLED BY OTHERS
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED RENDER SYSTEM
TIMBER OR STEEL FRAMING
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)

MONOPITCHED EXPOSED SOFFIT / WALL JUNCTION (Metal Flashing)

PARAPET/ROOF DETAIL

Det. 10.0
Scale 1:5

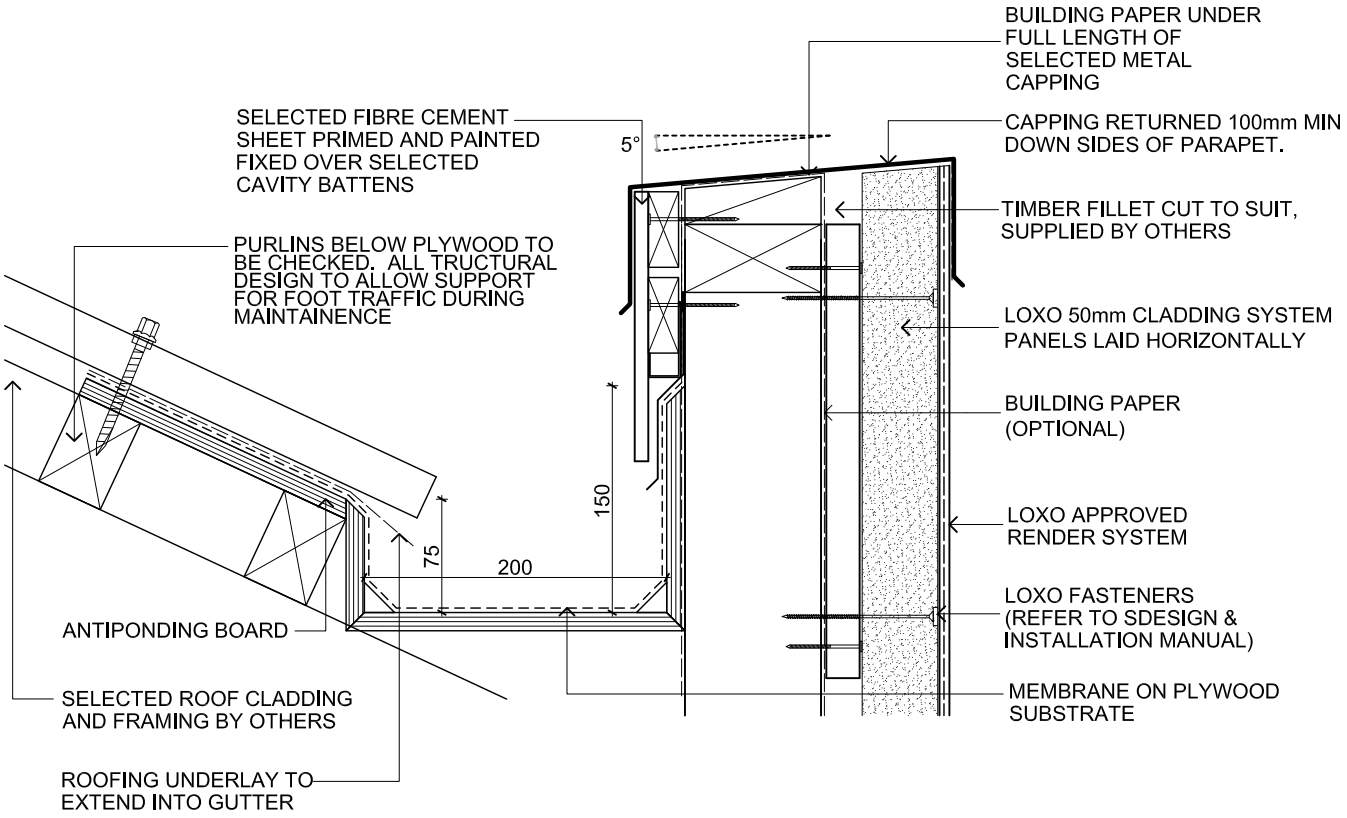

300 MAX = 5° SLOPE
OVER 300MM = 15° SLOPE
5°
POLYTHENE DPC SHEET TO LAP OVER BATTEN AND DOWN EACH SIDE BY 100MM MIN
CAPPING RETURNED 100mm MIN DOWN SIDES OF PARAPET.
5°
10
LOXO VERMIN CONTROL CAVITY CLOSER
SELECTED METAL CAPPING
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
TIMBER OR STEEL FRAMING
SOLID BLOCKING
LOXO 50MM CLADDING SYSTEM PANEL
SELECTED METAL FLASHING BY OTHERS
50
BUILDING PAPER (OPTIONAL)
LOXO APPROVED RENDER SYSTEM
LOXO FASTENERS (REFER TO DESIGN & INSTALLATION MANUAL)
SELECTED ROOF CLADDING AND FRAMING BY OTHERS
ROOFING UNDERLAY TO EXTEND UP 150MM BEHIND CLADDING


LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
DECK WATERPROOFING BY OTHERS TO EXTEND UP WALL LINE BY 200MM
35 MIN
35 MIN
LOXO VERMIN CONTROL CAVITY CLOSER
FILLET TO SUPPORT MEMBRANE

PARAPET / ROOF DETAIL - METAL FLASHING

Det. 10.1
Scale 1:1

PARAPET/GUTTER DETAIL

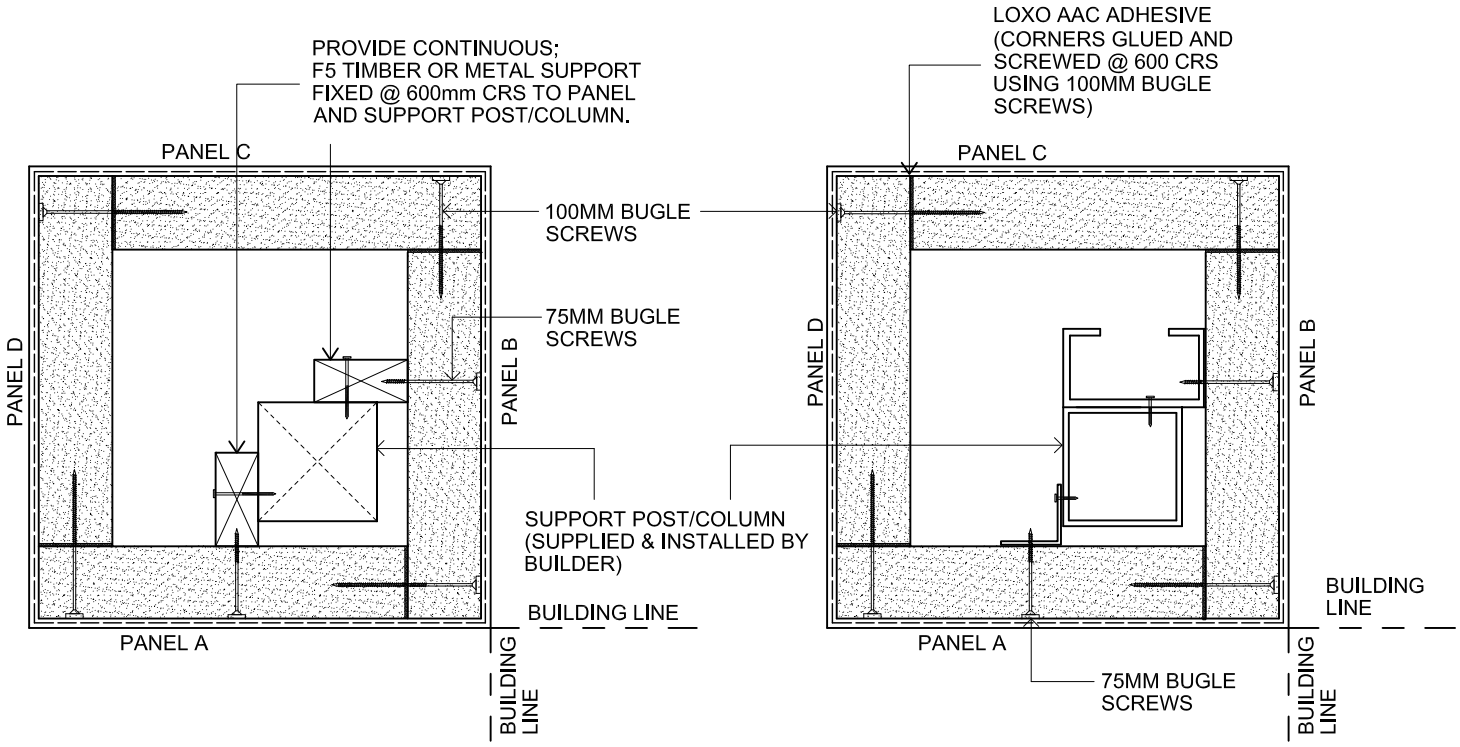

BUILDING PAPER UNDER FULL LENGTH OF SELECTED METAL CAPPING
SELECTED FIBRE CEMENT SHEET PRIMED AND PAINTED FIXED OVER SELECTED CAVITY BATTENS
5°
CAPPING RETURNED 100mm MIN DOWN SIDES OF PARAPET.
TIMBER FILLET CUT TO SUIT, SUPPLIED BY OTHERS
PURLINS BELOW PLYWOOD TO BE CHECKED. ALL TRUCTURAL DESIGN TO ALLOW SUPPORT FOR FOOT TRAFFIC DURING MAINTAINENCE
LOXO 50mm CLADDING SYSTEM PANELS LAID HORIZONTALLY
BUILDING PAPER (OPTIONAL)
150
75
200
LOXO APPROVED RENDER SYSTEM
LOXO FASTENERS (REFER TO SDESIGN & INSTALLATION MANUAL)
ANTIPONDING BOARD
SELECTED ROOF CLADDING AND FRAMING BY OTHERS
MEMBRANE ON PLYWOOD SUBSTRATE
ROOFING UNDERLAY TO EXTEND INTO GUTTER

PARAPET / INTERNAL GUTTER DETAIL

NOTE:
ALL DIMENSIONS SHOWN ARE INDICATIVE ONLY. ALL ARE SPECIFIC TO DESIGN

Det. 11.0
Scale 1:5

COLUMN DETAIL



NOTE:
THIS DETAIL IS NOT SUITABLE FOR SUSPENDED PANELS

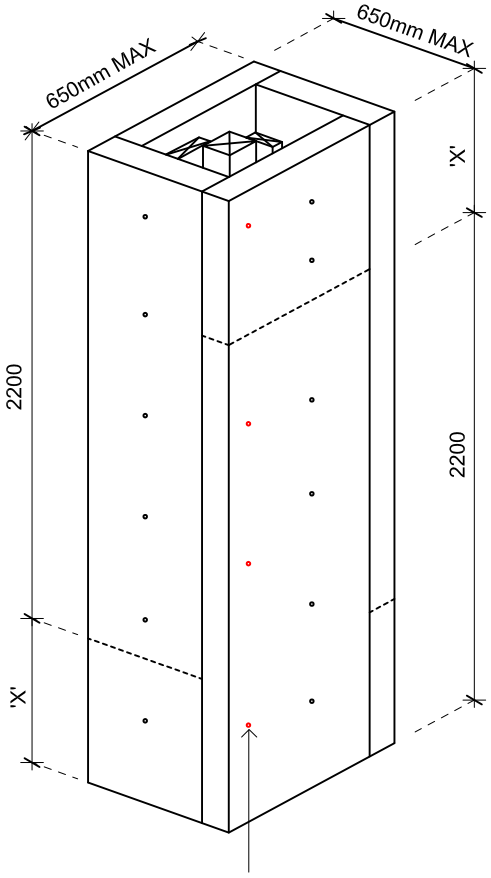
CONSTRUCTION METHOD

1- FIX PANEL A TO PANEL B
2- ALIGN WITH BUILDING LINE IN BOTH DIRECTIONS
3- FIX PANEL A TO CONTINUOUS TIMBER OR METAL SUPPORT
4- PLUMB PANEL A AND FIX TO SUPPORT POST/COLUMN
5- REPEAT 3 & 4 FOR PANEL B
6- FIX PANEL C & D TO COMPLETE THE (AAC) LOXO COLUMN

MAXIMUM SQUARE COLUMN SIZE
650mm X 650mm

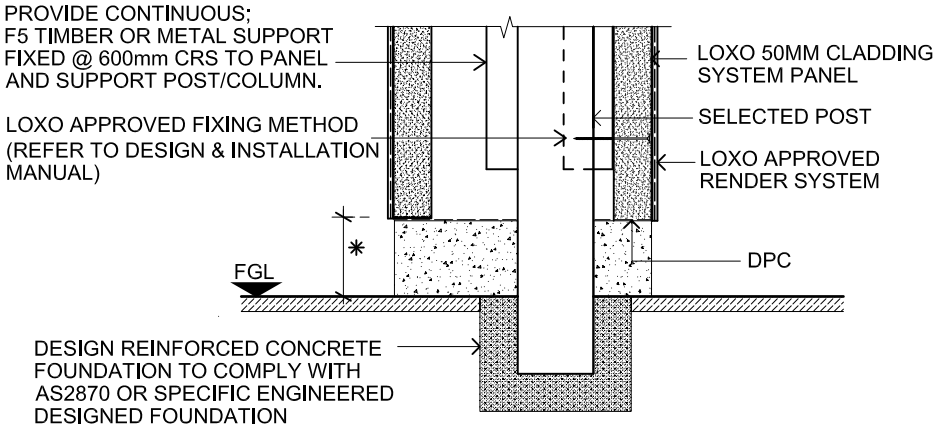
MAXIMUM RECTANGULAR COLUMN SIZE
700mm X 600mm

'X' DENOTES STAGGERED PANEL JOINT



PANEL CRN JOINT GLUED & SCREWED AT 600MM CTR USING 100mm BUGLE SCREWS

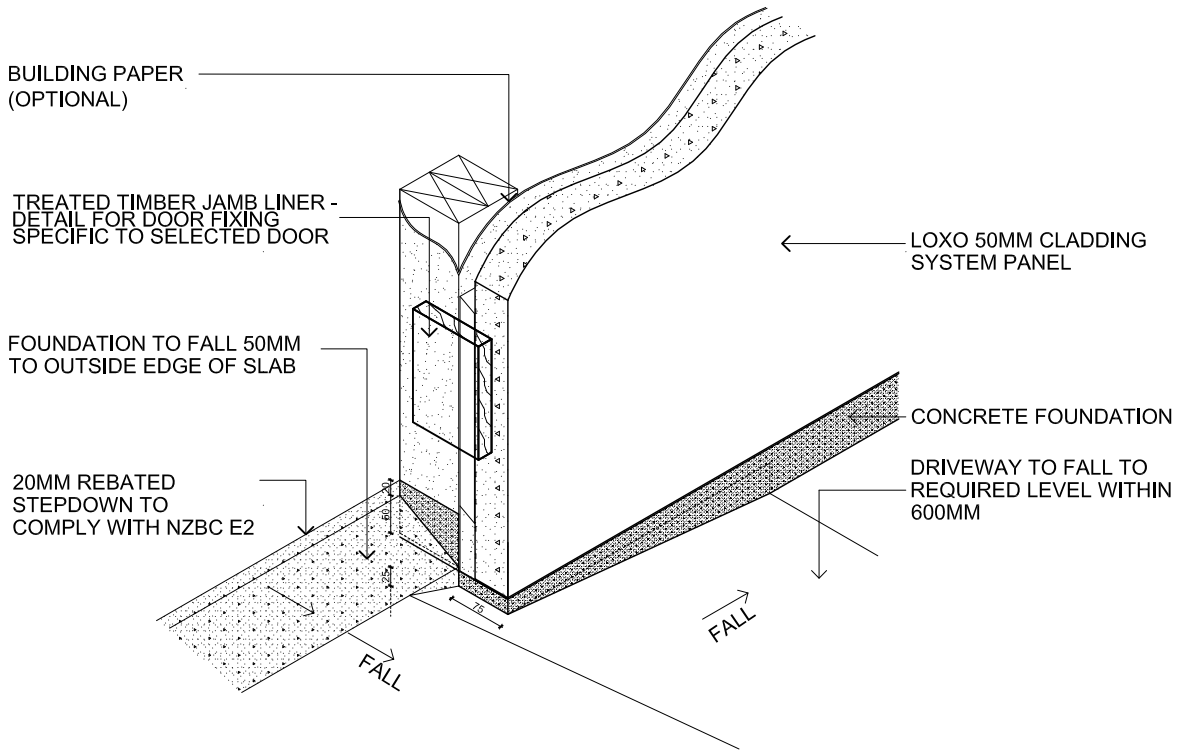
* Min. 20mm, but must also comply with termite protection requirements.


PROVIDE CONTINUOUS;
F5 TIMBER OR METAL SUPPORT
FIXED @ 600mm CRS TO PANEL
AND SUPPORT POST/COLUMN.
LOXO APPROVED FIXING METHOD
(REFER TO DESIGN & INSTALLATION MANUAL)
LOXO 50MM CLADDING SYSTEM PANEL
SELECTED POST
LOXO APPROVED RENDER SYSTEM
*
FGL
DPC
DESIGN REINFORCED CONCRETE FOUNDATION TO COMPLY WITH AS2870 OR SPECIFIC ENGINEERED DESIGNED FOUNDATION

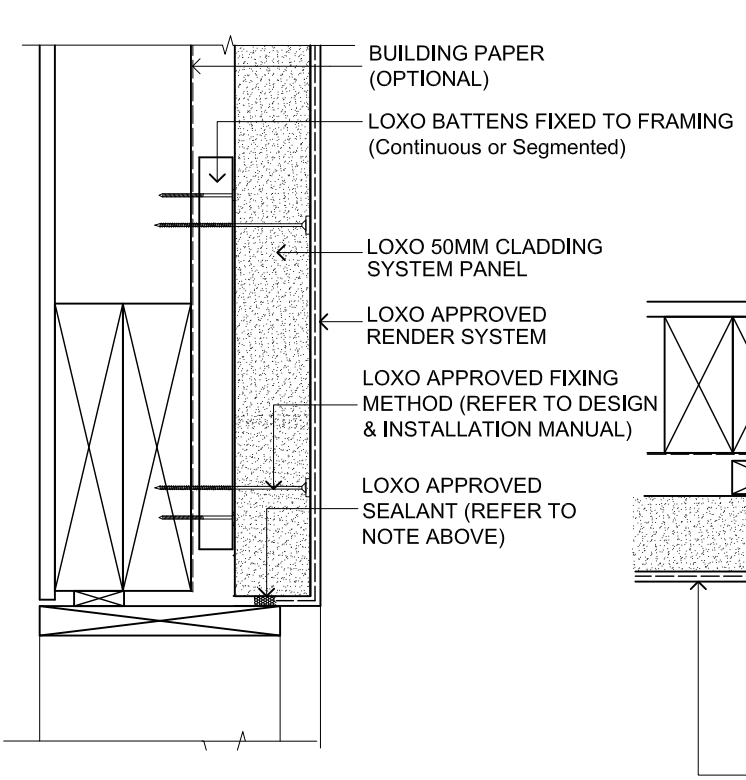
LOXO POST GROUND CONNECTION DETAIL

GARAGE DOOR DETAIL

Det. 11.1
Scale 1:5

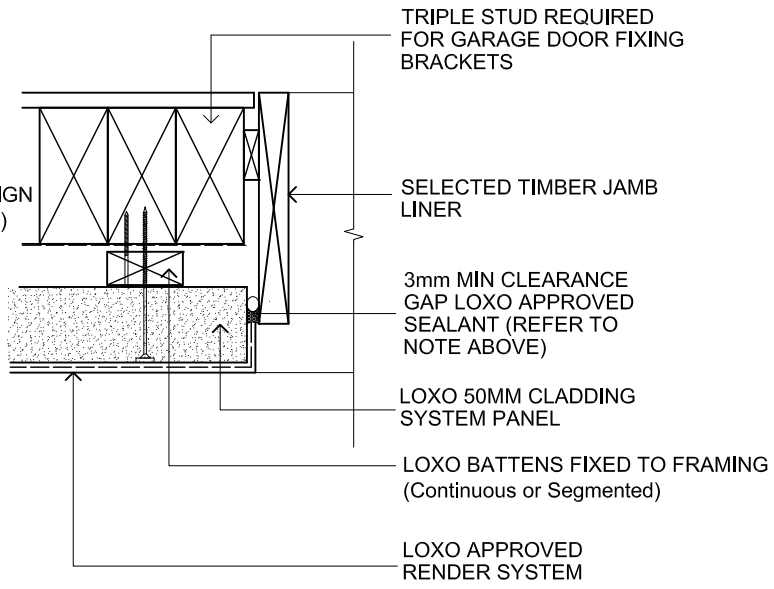


DOOR OPENING



NOTE:

SEALANT REQUIRED IN COASTAL AREAS (≤ 1000M FROM WATER AND IN WIND ZONE (≥ N4, C2)

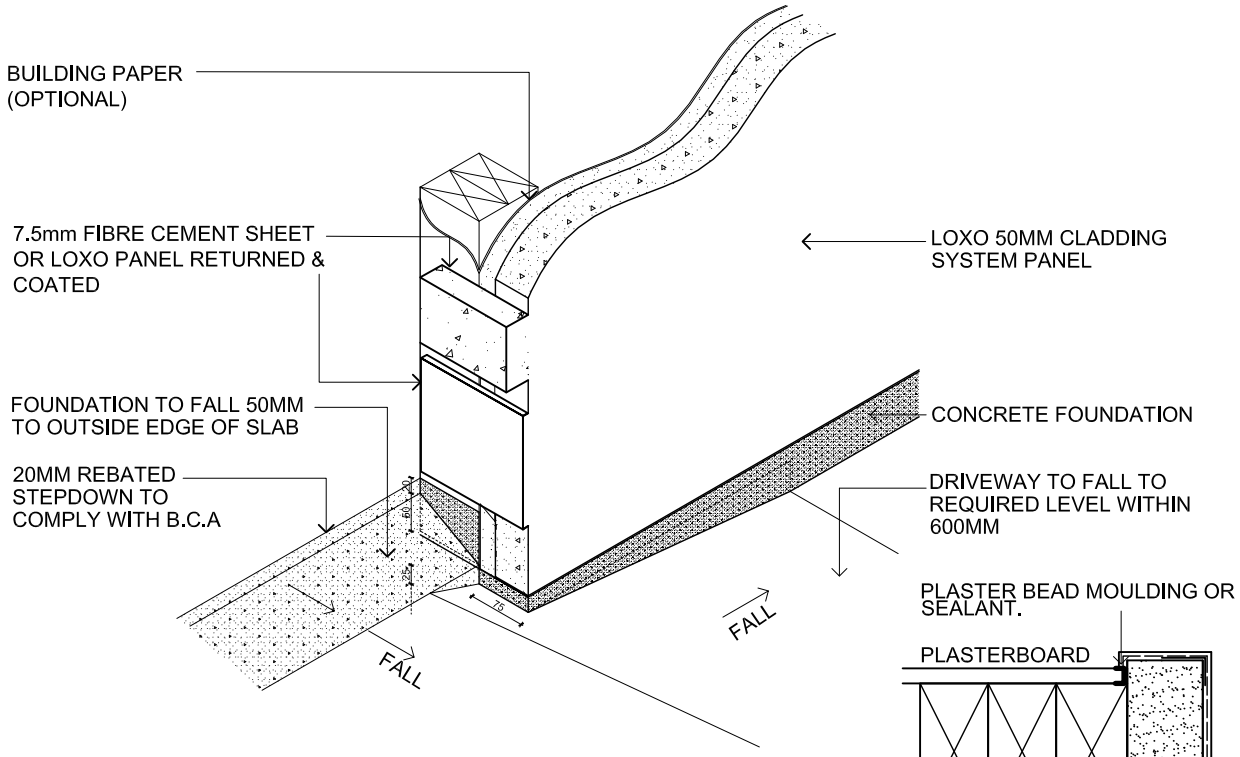


DOOR HEAD DETAIL

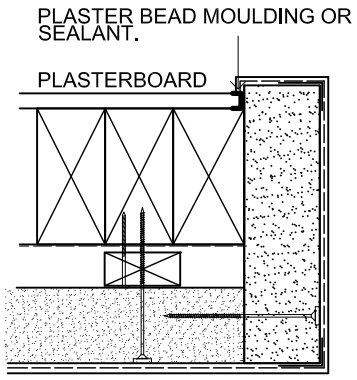
DOOR JAMB DETAIL

GARAGE DOOR DETAIL

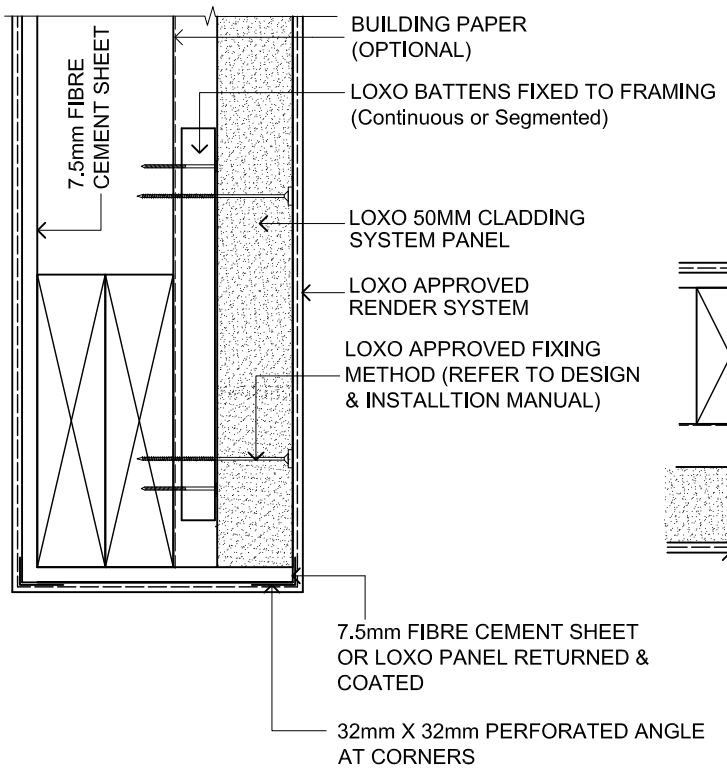
Det. 11.2
Scale 1:5



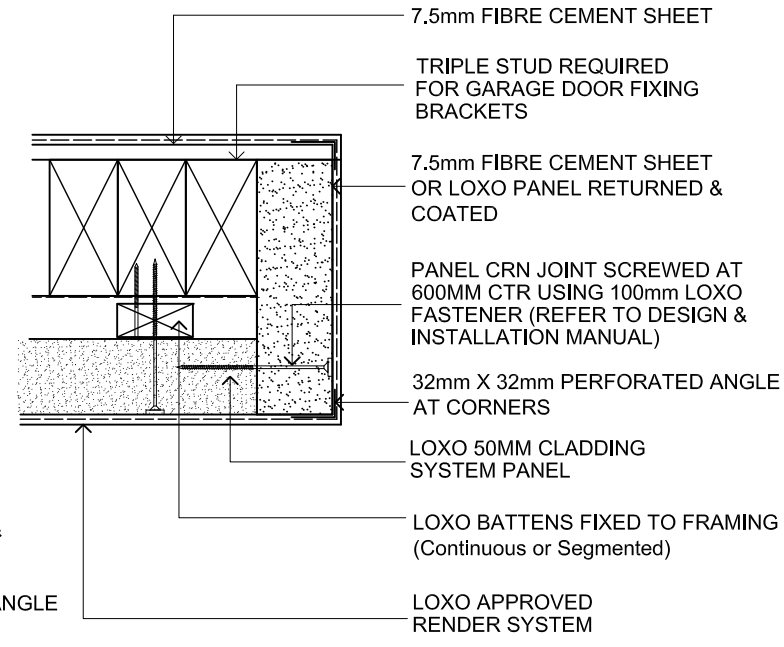
DOOR OPENING



DOOR JAMB DETAIL



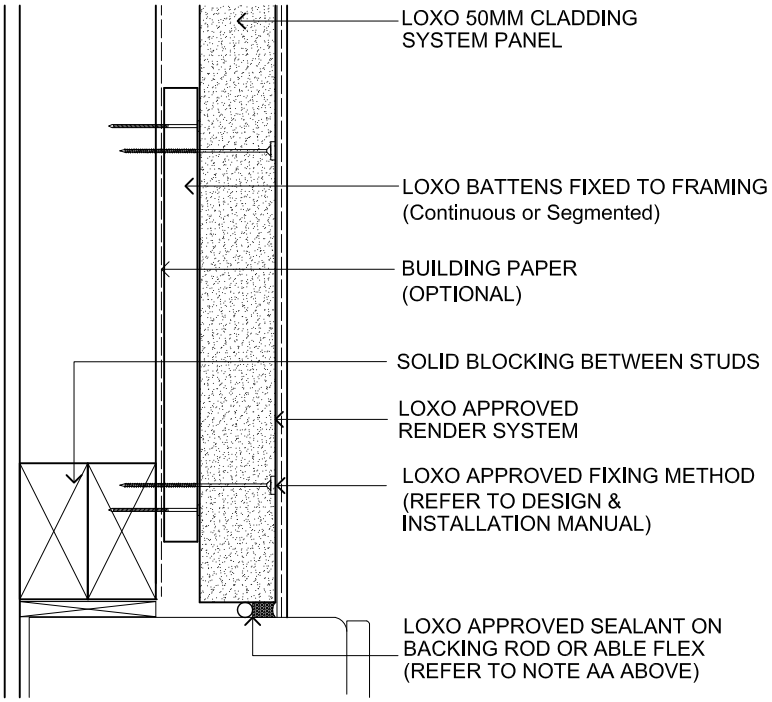
DOOR HEAD DETAIL



DOOR JAMB DETAIL

PENETRATION DETAIL

Det. 12.0
Scale 1:5

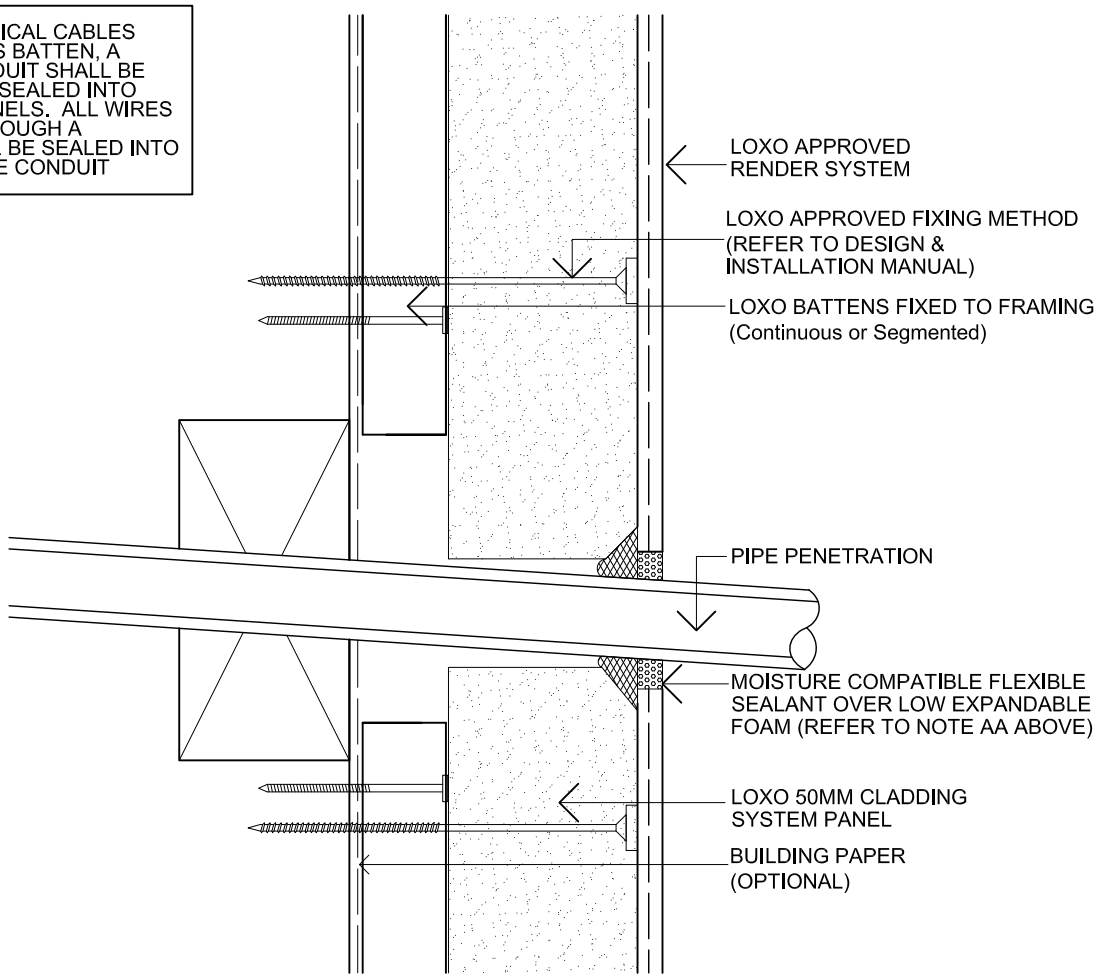

LOXO 50MM CLADDING SYSTEM PANEL
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
BUILDING PAPER (OPTIONAL)
SOLID BLOCKING BETWEEN STUDS
LOXO APPROVED RENDER SYSTEM
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO APPROVED SEALANT ON BACKING ROD OR ABLE FLEX (REFER TO NOTE AA ABOVE)

NOTE:
WHERE POSSIBLE, METERBOXES SHOULD BE LOCATED IN SHELTERED AREAS OF THE BUILDING.

NOTE AA:
ANY PENETRATION THAT IS PROUD OF THE SURFACE OF THE PANEL MUST BE SEALED.

METERBOX HEAD / JAMB / SILL DETAIL

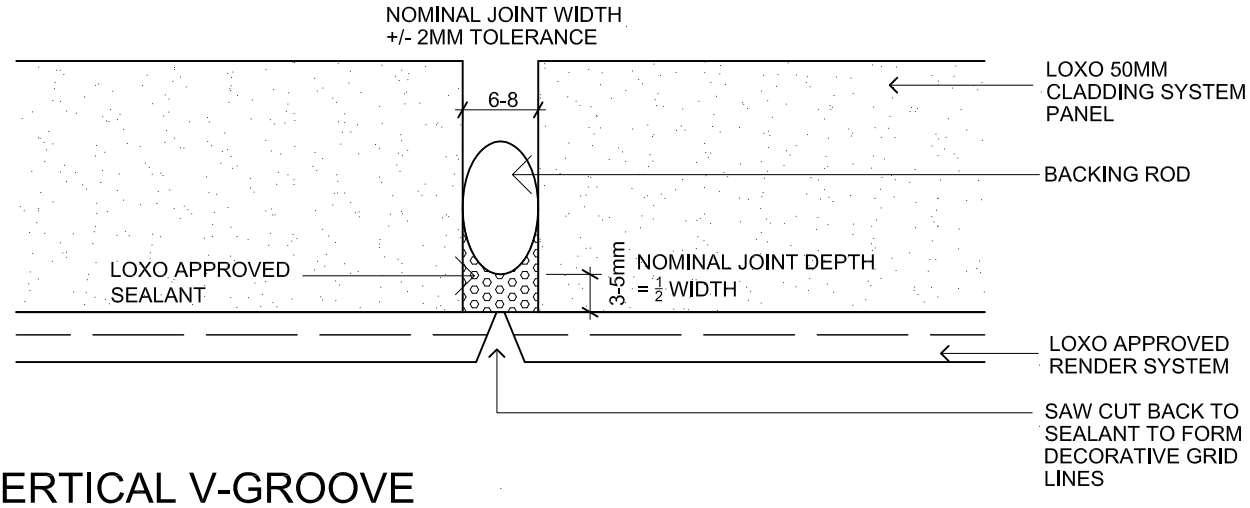
WHERE ELECTRICAL CABLES PENETRATE EPS BATTEN, A SLEVE OR CONDUIT SHALL BE PROVIDED AND SEALED INTO LOXO 50MM PANELS. ALL WIRES THAT PASS THROUGH A CONDUIT SHALL BE SEALED INTO POSITION INSIDE CONDUIT


LOXO APPROVED RENDER SYSTEM
LOXO APPROVED FIXING METHOD (REFER TO DESIGN & INSTALLATION MANUAL)
LOXO BATTENS FIXED TO FRAMING (Continuous or Segmented)
PIPE PENETRATION
MOISTURE COMPATIBLE FLEXIBLE SEALANT OVER LOW EXPANDABLE FOAM (REFER TO NOTE AA ABOVE)
LOXO 50MM CLADDING SYSTEM PANEL
BUILDING PAPER (OPTIONAL)

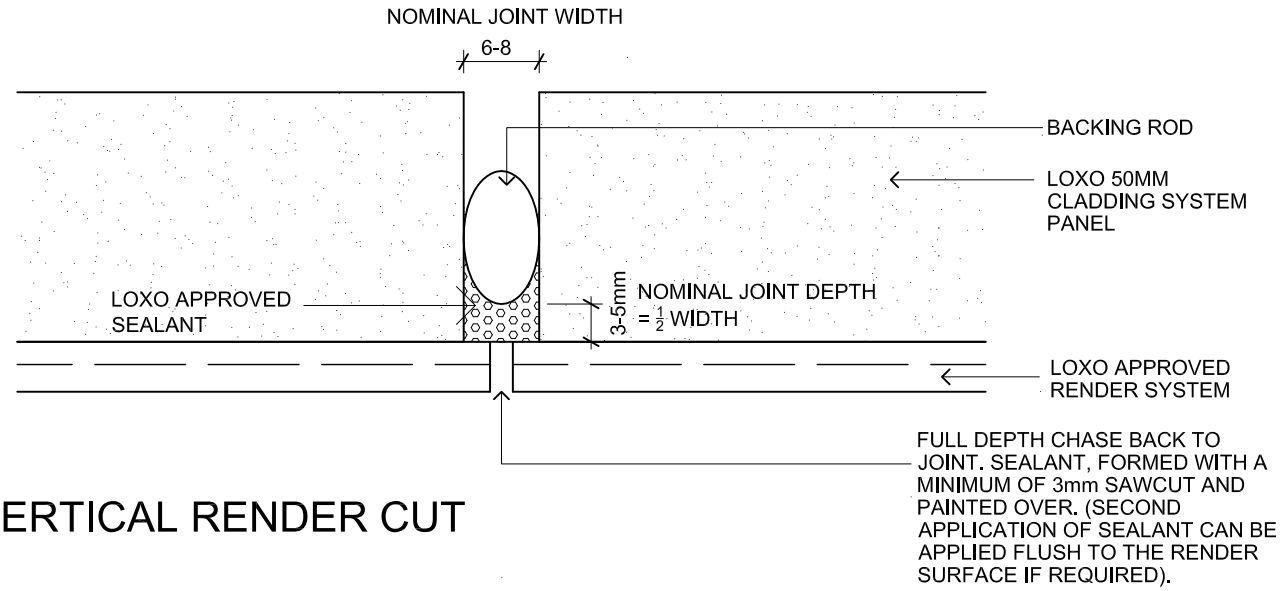
PIPE PENETRATION

CONTROL JOINT DETAILS

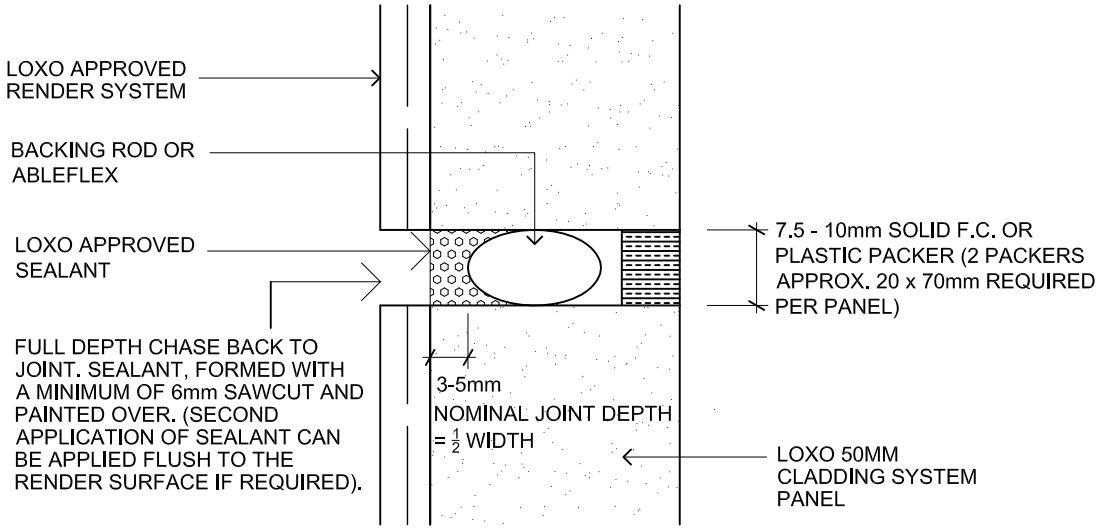
Det. 13.0
Scale 1:1



VERTICAL V-GROOVE


NOMINAL JOINT WIDTH
6-8
BACKING ROD
LOXO 50MM CLADDING SYSTEM PANEL
LOXO APPROVED SEALANT
3-5mm
NOMINAL JOINT DEPTH = ½ WIDTH
LOXO APPROVED RENDER SYSTEM
FULL DEPTH CHASE BACK TO JOINT. SEALANT, FORMED WITH A MINIMUM OF 3mm SAWCUT AND PAINTED OVER. (SECOND APPLICATION OF SEALANT CAN BE APPLIED FLUSH TO THE RENDER SURFACE IF REQUIRED).

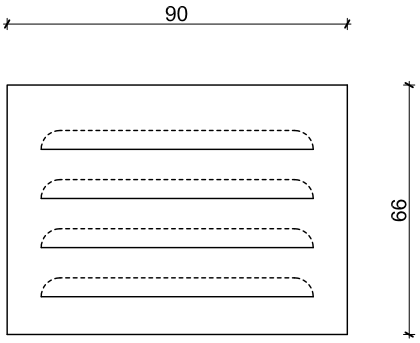
VERTICAL RENDER CUT


LOXO APPROVED RENDER SYSTEM
BACKING ROD OR ABLEFLEX
LOXO APPROVED SEALANT
7.5 - 10mm SOLID F.C. OR PLASTIC PACKER (2 PACKERS APPROX. 20 x 70mm REQUIRED PER PANEL)
FULL DEPTH CHASE BACK TO JOINT. SEALANT, FORMED WITH A MINIMUM OF 6mm SAWCUT AND PAINTED OVER. (SECOND APPLICATION OF SEALANT CAN BE APPLIED FLUSH TO THE RENDER SURFACE IF REQUIRED).
3-5mm
NOMINAL JOINT DEPTH = ½ WIDTH
LOXO 50MM CLADDING SYSTEM PANEL

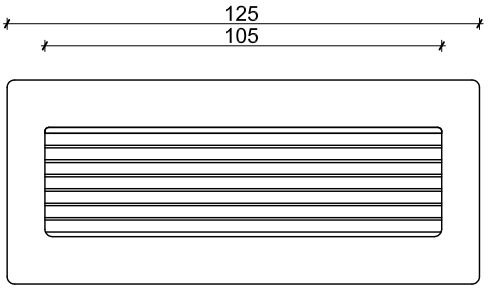
HORIZONTAL RENDER CUT

LOXO PVC VENT

Det. 14.0
Scale 1:1

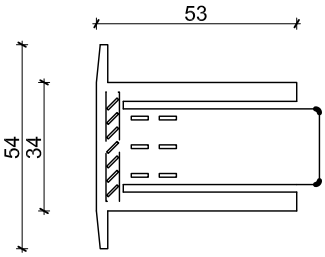


VENT ELEVATION

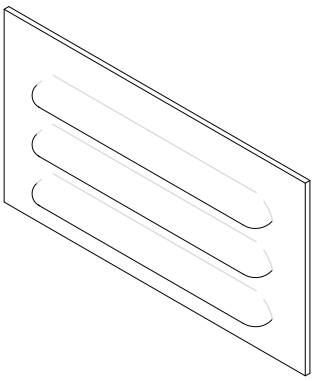


VENT ELEVATION

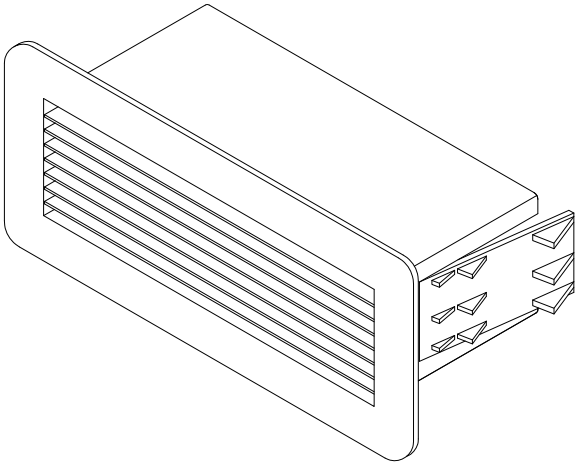
VENT SECTION



VENT SECTION



VENT



VENT

Appendix

- CodeMark Certificate
- BEAL Appraisal
- CSIRO Fire Certificate
- THERMAL Certificate (Energy Efficiency)
- ACOUSTICS Certificate
- ENVIRONMENTAL Certificate

CERTIFICATE OF CONFORMITY

This is to certify that

LOXO CLADDING SYSTEMS: 50mm AAC Panel

Product description
2200 x 600 x 50 mm Reinforced Autoclaved Aerated Concrete (AAC) Panel
Product purpose or use
1. Fire rated cladding for load-bearing external timber or steel framed walls 2. Fire barrier between timber or steel framing of separate occupancies in residential apartments. (The AAC will also contribute, together with insulating material, to providing acoustic attenuation.) 3. Flooring for timber or steel framed floor structures
Certificate holder
Loxo Cladding Systems Pty Ltd 1331 Stud Road Rowville, VIC 3178

Complies with the National Construction Code 2012:

1. **Volume One BP1.1, BP1.2 and Volume Two P2.1** in respect of structural performance, when designed and constructed in accordance with the Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition, and:
   - Table 1, Table 2 and Table 5
   - Loxo 50mm AAC Party Wall System Design and Installation Manual, August 2012 Edition
   - Loxo 50mm AAC Floor System Design and Installation Manual, August 2012 Edition
2. **Volume One CP1, CP2, and Volume Two P2.3.1,** in respect of fire performance, when designed and constructed in accordance with the fire-rated construction specifications and details in the Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition, the Loxo 50mm AAC Party Wall System Design and Installation Manual, August 2012 Edition achieve the following Fire Resistance Levels (FRL):
   - External wall exposed to fire source outside with 10mm internal plasterboard lining: 120/120/90
   - External wall exposed to fire source outside with 13mm internal fire-grade plasterboard lining: 120/120/120
   - Party wall exposed to fire source either side with 10mm plasterboard lining both sides: 90/90/90
3. **Volume One FP1.4 and Volume Two P2.2.2** in respect of weatherproofing for external walls, when detailed and constructed in accordance with the Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition.
4. **Volume One FP1.5 and Volume Two P2.2.3** in respect of damp-proofing for external walls, if provided with damp-proof courses complying with AS 3700–2011 Clauses 4.7.3, 11.6, and 12.4.16.
5. **Volume One FP5.2 and Volume Two P2.4.6** in respect of acoustic performance of walls separating units, when detailed and constructed in accordance with:
   - Table 3,
   - Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition and,
   - Loxo 50mm AAC Party Wall System Design and Installation Manual, August 2012 Edition
6. **Volume One GP5.1 and Volume Two P2.3.4** and **P3.7.4** in respect of buildings constructed in a designated bushfire prone area, when designed and constructed in accordance with the fire-rated construction specifications and details in the Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition, and the requirements of AS 3959–2009, is acceptable for use in all bushfire attack levels including BAL–FZ.
7. **Volume One JP1 and Volume Two P2.6.1** in respect of energy efficiency of walls when designed and constructed in accordance with:
   - Table 4 and,
   - Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition

   In applications where complying thermal resistances of walls or floors are to be calculated, a thermal resistance of R 0.336 m^2.K/W shall be used for 50mm thick Loxo AAC panels.

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CodeMark Certification Body			18/9/2012	26/9/2012	18/9/2015	GM_CM30031 Rev A1
Global-Mark Pty Ltd, Suite 4.07, 32 Delhi Road, North Ryde NSW 2113, Australia - www.Global-Mark.com.au	Herve Michoux Managing Director	Unrestricted Building Certifier, Peter Gardner	Date of issue	Last update	Date of expiry	Certificate Number

This Certificate of Conformity is issued by an accredited certification body under arrangement with JAS-ANZ. The ABCB does not in any way warrant, guarantee or represent that the Product the subject of this Certificate of Conformity conforms with the BCA, nor accepts any liability arising out of the use of the Product. The ABCB disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this Certificate.
It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the ABCB website, www.abcb.gov.au

CERTIFICATE OF CONFORMITY

This is to certify that

LOXO CLADDING SYSTEMS: 50mm AAC Panel

CODEMARK™

State Additions or Variations

1. Volume One:
   - NSW J(A)P1
   - In NT, Qld and TAS Section J is replaced by BCA 2009 Section J
   - SA FP1.5
   - NT FP5.2
   - NSW and Qld GP5.1
   - Tas GP5.1 (a)
2. Volume Two:
   - In NSW Part 2.6 does not apply. New South Wales BASIX classifications are as tabulated as per the NSW Addition.
   - In NT and TAS Part 2.6 is replaced by BCA 2009 Part 2.6
   - Vic P2.6.1
   - SA P2.2.3, NSW P2.2.3,
   - SA P2.3.1
   - Tas P2.3.4
   - NT P2.4.6 (a)

Subject to the following conditions and limitations:

1. Product selection, and incorporation into the building design, shall be made by a professional Architect or Engineer or other appropriate person who:
   - Has qualifications and experience acceptable to the relevant approval authorities; and
   - Has ready access to:
     - Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition
     - Loxo 50mm AAC Party Wall System Design and Installation Manual, August 2012 Edition
     - Loxo 50mm AAC Floor System Design and Installation Manual, August 2012 Edition
2. Product installation shall be carried out by a competent tradesman under the direction of a Builder, both of whom have ready access to:
   - Loxo 50mm AAC Panel System Design and Installation Manual, August 2012 Edition
   - Loxo 50mm AAC Party Wall System Design and Installation Manual, August 2012 Edition
   - Loxo 50mm AAC Floor System Design and Installation Manual, August 2012 Edition
3. Installer must complete, sign and send to the Certificate Holder a Certificate of Installation when installation is completed.

Limit of the scope of certification

This certification includes the weather-proofing and damp-proofing requirements of the AAC walls and flooring, but does not apply to:

- Control of condensation, which requires additional consideration; nor
- Weatherproofing of windows, doors or other items built into the walls. For these, frames must drain to the outside of the building (not into the cavity), frames must be properly sealed and properly flashed.

Table 1, Properties

Property	Value	Units
Ambient[1] Density, ρ_{amb}	520	kg/m^3
Dry[2] Density, ρ_{dry}	500	kg/m^3
Working[3] Density, ρ_{design}	610	kg/m^3
Permanent Action, G	0.3	kN/m^2
Characteristic Unconfined Compressive Strength, f'_{uc}	1.1	MPa
Modulus of Rupture, f'_{ut}	0.73	MPa
Design Ultimate Limit State Bending Capacity, $øM$	0.12	kNm
Design Serviceability Limit State Deflection Limit, δ_{max}	$^{SPAN}/_{240}$	
Coefficient of contraction	0.4	mm/m
Coefficient of thermal expansion	10	$x10^{-6}/°C$

CERTIFICATE OF CONFORMITY

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This is to certify that

LOXO CLADDING SYSTEMS: 50mm AAC Panel

Notes:

1. Ambient density is that achieved by the product when it has reached equilibrium at 23°C, 50% RH. The moisture content by mass in this state is typically between 2% and 5%.
2. Dry density is the manufacturer's reported density, the typical frame of reference for grading AAC material. It is achieved by oven drying specimens so that the moisture content is 0%.
3. Working density is to be used for calculation of effects due to permanent actions.

Table 2, Fixing Specification

Wind Class	Max Horizontal Spacing for Battens and Panel Screws		Max. Panel Screw Spacing Vertically	
	Corner Zone	Typical Zone	Corner Zone	Typical Zone
N1, N2, N3, C1	600	900	500 (2 screws/600mm)	500 (2 screws/600mm)
N4, C2	600	600	250 (3 screws/600mm)	500 (2 screws/600mm)
N5, C3	450	450	250 (3 screws/600mm)	250 (3 screws/600mm)

Screw size should be No. 14 as specified.

Table 3, Acoustic Insulation

Loxo System	System Details	Acoustic Rating	
		R_w	R_w+C_{tr}
70mm timber frame	• 1 layer of 10mm plasterboard both sides	63	53
90mm timber frame	• 1 layer of R2.0 insulation against the plasterboard	65	55
76mm steel frame	on both sides	64	53
92mm steel frame	• Minimum 10mm cavity both sides of Loxo panel	65	55

Table 4, Thermal Insulation

Loxo System	System Details Based on: 10mm plasterboard lining	Total R-Value (m^2.K/W)	
		Summer	Winter
5070-02 NS and 5090-02 NS	20-40mm cavity, no sarking, 70mm or 90mm frame, R2.0 glasswool insulation	2.63 (min.)	2.84 (min.)
5090-03 NS	20-40mm cavity, no sarking , 90mm frame, R2.5 glasswool insulation	3.11 (min.)	3.24 (min.)
5090-01 DS	40mm cavity, double-sided anti-glare foil sarking, 90mm frame, R2.5 glasswool insulation	3.49	3.83

The above figures refer to a system R-Value (i.e. including air films, cavity and other components)

Table 5, Panel Bending Capacity

Panel Span (mm)	Ultimate Limit State Load (kPa)
450	6.65
600	3.76
900	1.67
1200	0.94
1500	0.60
1800	0.42
2100	0.32

End of the document

BEAL Appraisal Certificate

LOXO Cladding Panel Veneer System

Product

1.1 The LOXO Cladding Panel Veneer System is a drainable non-ventilated cavity system, comprising Autoclaved Aerated Concrete (AAC) wall cladding panels with a meshed base render, texture coated finish. It is designed to be used as an external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system consists of Autoclaved Aerated Concrete (AAC) panels (LOXO Cladding Panels) fixed over a batten system that has been fixed to a timber or metal wall frame. There is a choice of two batten types; (i) high density polystyrene, and (ii) H3 treated pine timber. The battens can form a cavity from 20mm to 40mm, depending on the requirements of the project.

1.3 A LOXO approved coating system must comply with the following:

1.3.1 A minimum of a 3mm thick Base Coat render reinforced with fibreglass mesh;

1.3.2 A Primer/Sealer.(Optional - dependent on coating manufacturers recommendations);

1.3.3 A minimum of a 1.0mm thick Texture Coat (Wet Texture or Dry Texture material);

The Wet Textures may be coloured through (tinted) and may not require the application of a paint system (dependent on coating manufacturers recommendations)

The Dry Textures will require the application of a 100% acrylic based exterior paint system.

1.4 The system incorporates a primary and secondary means of weather resistance. The primary being the aesthetic coating system applied over the LOXO AAC Panels, but in the event that water was to find its way through the coated wall cladding layer, the cavity acts as the secondary means of weather resistance. The non-ventilated cavity system allows the water to drain to the base of the wall and exit via the (non sealed) perimeter flashing (DPC) which acts as a continual drain (weep hole) at the base of the wall, regardless if the wall is resting on or overhanging the slab or floor system.

Building Regulations

2.1 In the opinion of BEAL, the LOXO Cladding Panel Veneer System, if designed, installed and maintained in accordance with the statements and conditions of this Appraisal Certificate, will meet or contribute to meeting the following provisions of the Building Code of Australia:

BCA 2011 Volume 2 Class 1 and class 10 buildings (Houses, sheds, carports etc.)

Part 2.1 - Structure: Performance requirement P2.1 (see Paragraphs 9.1 to 9.6)

Part 2.2 - Damp and Weatherproofing: Performance requirement P2.2.2 Weatherproofing (see Paragraphs 12.1 to 12.7)

Part 2.3 - Fire Safety: Performance requirement P2.3.1 (see Paragraph 11.1)

Applicant:

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FAX: +61 3 9790 6406
E-mail: info@loxo.com.au
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www.beal.co.nz

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Part 2.6 – Energy Efficiency: Performance requirement P2.6.1 Building (see Paragraph 13.1 to 13.3)

2.2 The LOXO Cladding Panel Veneer System has been appraised as an **Alternative Solution** in terms of compliance with the Building Code of Australia.

Scope and Limitations

3.1 The LOXO Cladding Panel Veneer System has been appraised for use as an external wall cladding system for buildings within the following scope:
On class 1 and class 10 type buildings; and,
Constructed with timber framing complying with AS1684 Parts 2 and 4; or,
Constructed with steel framing complying with AS/NZS4600 and NASH Standard 2005 Part 1; and,
situated in non cyclonic wind zones up to, and including N3.

3.2 The LOXO Cladding Panel Veneer System must only be installed on vertical surfaces (except for tops of parapets, sills and balustrades, which must have a minimum 5° slope and be weatherproofed in accordance with the Technical Literature).

3.3 The system is appraised for use with aluminum window and door joinery that is installed with vertical jambs and horizontal heads and sills. (The Appraisal of the LOXO Cladding Panel Veneer System relies on joinery meeting the requirements of AS2047 for the relevant building wind zone or being specifically designed for use in specifically designed buildings).

3.4 Installation of components and accessories supplied by LOXO must be carried out only by personnel trained and certified by LOXO.

Technical Literature

4.1 Refer to the LOXO Cladding Panel Veneer System Technical Manual Edition Dec 2011. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained within the Technical Literature and scope of this Appraisal Certificate must be followed .

4.2 For a copy of this Technical Literature and any subsequent updates please refer to:
www.loxo.com.au

Technical Specification

System Components and Accessories:

5.1 LOXO Cavity Battens:
Cavity battens are 20mm to 40mm thick and 250mm long, manufactured from either:
(i) Very High Density (Class VH) EPS with a density of no less than 28kg/m³ or
(ii) H3 treated pine timber

5.2 LOXO Cavity Batten Fixing:
(i) 50mm hot dipped galvanised steel flat head nail for use with the 20mm battens to timber frames;
(ii) 75mm hot dipped galvanised steel flat head nail for use with the 40mm battens to timber frames;
(iii) 40mm galvanized drill point countersunk screws for use with the 20mm battens to steel frames
(iv) 60mm galvanized drill point countersunk screws for use with the 40mm battens to steel frames;
(v) Construction Adhesive such as Maxbond, Liquid Nails or similar may be used to temporarily fix the battens to the frame or building wrap;

5.3 Vermin Control Strips, or Cavity Closer Strips: Metal:
Metal Vermin Control Strips or Cavity Closer Strips are continuous metal top hats used to close the gap between the bottom plate and the back of the panel. Mitre cut top hats at corners to maintain vermin proofing. The top hats are fixed to the bottom plate using:
- 12-11 x 25mm Hex Head Type 17 screws for timber frames
- 10-16 x 16mm Hex Head Tek screws for steel frames

5.4 Vermin Control Strips, or Cavity Closer Strips: Timber:
Timber Vermin Control Strips, or Cavity Closer Strips are continuous timber LOXO Cavity Battens used to close the gap between the bottom plate and the back of the panel. Mitre cut or butt timber battens at corners to maintain vermin proofing, the timber strips are installed to the bottom plate with 75mm hot dipped galvanised steel flat head nail.

5.5 LOXO Cladding Panels:
LOXO Cladding Panels are manufactured from autoclaved aerated concrete with an approximate density of 560kg/m³. LOXO Cladding Panels are supplied in lengths of 2200mm long by 600mm wide, and are available in the following thicknesses:
- 50mm and weigh approx 37kg per panel
- 75mm and weigh approx 56kg per panel

5.6 LOXO Cladding Panel Fasteners:
- 14-10 x 75mm MP Bugle Head Type 17 screw is used to fix panels to timber battens.
- 14-10 x 100mm MP Bugle Head Type 17 screw must be used with EPS battens up to a maximum cavity thickness of 20mm to ensure a minimum of 25mm of the screw is embedded into the timber frame. These screws are also used in steel frames with EPS battens up to a maximum cavity thickness of 40mm.
- 14-10 x 125mm MP Bugle Head Type 17 screw must be used with EPS battens up to a maximum cavity thickness of 40mm to ensure a minimum of 25mm of the screw is embedded into the timber frame.

NOTE: A minimum of Class 3 fasteners must be used with the LOXO Cladding Panel Veneer System. AS3566 corrosion class 3 or 4 fasteners must be used in BCA defined corrosion zones 1,2,3, and 4. Grade 304 stainless steel in the sea spray zone.

5.7 LOXO Panel Adhesive:
LOXO Panel Adhesive is a polymer modified cement based material supplied in 20kg bags. The adhesive is used for bonding the panel joints during construction and must be applied to both vertical and horizontal panel joints. .

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5.8 LOXO Anti-Corrosion Protective Paint:

LOXO Anti-Corrosion Protection Paint is used to treat any exposed reinforcing steel to prevent corrosion occurring. It is supplied in 500ml containers. The instructions for use are on the container.

5.9 Aluminium External Corner Angles:

Aluminium External Corner Angles - 32mm x 32mm are used on all AAC corner edges to provide clean straight edges that are strong and durable.

5.10 LOXO PVC Vents:

LOXO PVC Vents are not required with a non-ventilated system, however if specified by the project engineer, they can be used to create visible drain vents and therefore create a ventilated cavity wall system. If the LOXO PVC Vents are to be used, it is advisable that sarking is used as good building practice.

5.11 Damp Proof Course (DPC):

DPC is used to prevent rising damp from concrete footings, slabs or paths wetting the base of the panels.

5.12 Sarking:

Sarking is required with EPS battens to prevent trapped moisture between the batten and the frame.

5.13 Construction Adhesive:

Construction Adhesive such as Maxbond, Liquid Nails or similar used for adhering accessories such as Aluminium External Corner angles to LOXO Cladding Panels, or temporarily fixing EPS Cavity Battens prior to the installation of the Panel Fasteners.

5.14 Flexible-sealant:

An external grade flexible sealant such as Bostik Seal 'N' Flex or equivalent can be used as a weather proofing sealant around windows, doors and penetrations through the LOXO Cladding Panels, to prevent or reduce the amount of water ingress into the cavity as good building practice.

LOXO Approved Render (Coating System)

All Render and Paint components used for the coating of the LOXO Cladding Panels are to be approved by LOXO and must conform to the following criteria:

6.1 Base Coat Render:

The base coat render must be fully meshed. It must be a polymer-modified, Portland cement-based render; it is mixed on site with clean drinking water. It is applied as a base coat, either over or encapsulating a high quality alkali resistant fibre glass mesh reinforcement. Ensure there is a minimum of 2mm thickness over the mesh. The total meshed base coat should have a minimum thickness of 3mm.

6.2 The Reinforcing Mesh:

The Reinforcing Mesh must be a high quality alkali resistant fiberglass mesh with a nominal size of approx. 4mm – 5mm square and a weight of 150g/m² for use in domestic and light commercial situations.

6.3 Primer Coat (Optional):

A water based primer/sealer to enhance adhesion. (Refer to coating manufacturer's specification)

6.4 Texture Coat:

Two specifications for the Texture Coat material are available:

6.4.1 Dry Texture: **(Cement based polymer modified dry powder)**

A high build cement based polymer modified coating applied with a trowel or float over the basecoat. The texture must have a minimum thickness of 1.0mm. ***It is mandatory*** to overcoat the dry texture with a LOXO approved paint system.

6.4.2 Wet Texture: **(A pre-mixed full acrylic texture)**

A high build full acrylic coating applied with a trowel or float over the basecoat. The texture must have a minimum thickness of 1.0mm. The Wet Textures may be coloured through (tinted) and may not require the application of a paint system (dependent on coating manufacturers recommendations).In the case were a paint system is not required, the application of the wet texture forms the primary means of weather resistance.

6.5 Paint System:

The paint system (membrane coating) must comprise a minimum of two coats of a 100% acrylic-based exterior paint. The paint / membrane must be applied to a minimum dry film thickness of 150*um* per coat and must have a crack bridging capability of five (5) times the total dry film thickness. The application of the paint system forms the primary means of weather resistance.

Handling and Storage

7.1 Handling and storage of all the materials supplied by LOXO or the accredited contractor, both on and off site are under the control of LOXO accredited contractors.

7.2 Dry storage must be provided on site for the LOXO Cladding Panel, fiberglass mesh and bags of adhesive/render with the LOXO Cladding Panels stored flat and protected from physical damage. EPS and timber battens, flashing, mouldings etc. must be protected from direct sunlight, physical damage and stored flat and under cover out of the weather. All liquid components shall be stored in dry, frost free conditions.

7.3 Handling of LOXO Cladding Panels require care to prevent damage to corners or excessive flexing. Panels should always be carried on edge.

7.4 Handling and storage of all the materials supplied by the building contractor, both on and off site is the responsibility of the building contractor. Materials must be handled and stored in accordance with the manufacturer's instructions.

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Design Information

Framing

Timber Framing

8.1 Timber used in timber framing shall be treated as required by the relevant Part of AS1684.

8.2 Timber framing must comply with the relevant Part of AS1684 for both buildings or parts of buildings. Where buildings or parts of buildings are outside the scope of AS1684 then they must be to specific design in accordance with AS 1720. In all cases, studs must be at a maximum of 600mm centres.

8.3 Where the ground or sub-floor space is excessively damp or subject to frequent flooding, timber members shall be Class 1 or 2 or H3 preservative treated timber in accordance with AS1684 parts 2 or 4

Steel Framing

8.4 Steel framing must comply with NASH Standard 2005, Part 1 Residential and low-rise steel framing. In all cases, studs must be at a maximum of 600mm centres. Noggins must be fitted flush with the stud.

LOXO Cladding Panel Layout

8.5 LOXO Cladding Panels are installed horizontally in a stretcher-bond pattern. Vertical panel edges may be jointed on stud or off stud via back blocking. LOXO Cladding Panels must be supported at fixing locations with vertical cavity battens in accordance with the requirements of BCA. At the base of the wall the LOXO Cladding Panel can be either rested on a concrete rebate (a minimum of 30mm below the finished floor level) or hang 50mm below the finished floor level, but not below the external ground level.

General

8.6 The LOXO Vents provide a minimum ventilation opening area of 1000mm² per lineal metre of wall, when fixed at 1000mm centres. If specified, then the specifier must detail the number of vents required to achieve the desired ventilation flow.

8.7 The ground clearance between the bottom of the finished panel and ground must be adhered to at all times. At ground level, paved surfaces must be kept clear from the bottom edge of the LOXO Cladding Panel Veneer System by a minimum of 10mm, and unpaved surfaces by 25mm with these areas having a minimum of 1 in 100mm fall away from the building.

8.8 At balcony, deck or roof to wall junctions, the bottom edge of the panel must be kept clear of any adjacent finished surface, or above the top surface of any adjacent roof flashing by a minimum of 10mm.

8.9 Where the LOXO Cladding Panel Veneer System abuts other cladding systems, designers must detail the junction to meet their own requirements whilst meeting the performance requirements of the BCA. The Technical Literature does provide some guidance. Details not included in the Technical Literature have not been assessed and are therefore outside the scope of this Appraisal.

8.10 For buildings that must have barriers to airflow, the use of plasterboard interior linings with all joints stopped should be installed, or where walls that are not lined, such as attic spaces at gable end, a rigid sheathing or air barrier, complying with BCA, must be fixed to framing prior to fixing cladding or cavity battens as per BCA or AS 1684.

8.11 PVC sheathed electrical cables must be prevented from direct contact with the LOXO EPS Cavity Battens. When cables must penetrate the EPS cavity battens for electrical connections, the cable must be encased within electrical conduit so that contact is prevented.

Articulated Joints (Control Joints)

8.12 Control joints where LOXO Cladding Panels are used must be constructed in accordance with the Technical Literature and as follows;

8.13 Horizontal control joints - To be installed when intermediate floor joists are not seasoned and/or when the height of the wall exceeds 8.0m

8.14 Vertical Control Joints – are required at internal corners and at maximum of 6.0m centres; aligned with any control joint within the structural framing, or where the system abuts other cladding system.

(Note: Where possible control joints shall be located in line with window and door openings. Horizontal and vertical control joints must be located over structural supports. The Technical Literature provides some guidance for the design of vertical control joints where the system abuts different cladding types. Details not included within the Technical literature or those that are marked as 'Specific Design Only' are outside the scope of this Appraisal Certificate and are the responsibility of the designer.)

Inter-Storey Junction

8.15 Inter-storey drained joints are not required with the LOXO Cladding System.

Structure - Clause P2.1

Mass

9.1 The dry mass of the LOXO Cladding Panel is approximately 28kg/m^2 without coating and 30kg/m^2 to 32kg/m^2 with the applied coating .

Impact Resistance

9.2 The system has adequate resistance to impact loads that the cladding system is likely to be subjected to when used in a residential situation.

Wind Zone

9.3 The LOXO Cladding Panel Veneer System is suitable for use in all building wind zones as per AS 4055, up to, and including N3, or up to the ultimate limit state (ULS) wind pressure of 2500Pa when the building is subject to specific design.

9.3.1 Where a 20mm to 40mm cavity is produced the respective cavity battens are fixed to the wall framing at 600mm centres vertically. The LOXO Cladding Panel must then be fixed into or through the cavity batten with the appropriate screw at 500mm centres.

500mm centres is applicable to both;

9.3.2 *N1 to N3 defined building wind zones with studs at maximum 600mm centres, and;*

9.3.3 *Specifically designed buildings up to design differential 2.5kPa ULS wind pressure with studs at maximum 600mm centres.*

Generally:

9.4 *Fixings to be positioned minimum 50mm in from the edge of the panel giving an overall layout of 500mm*

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centres per panel.

9.5 *Fixings are also required horizontally at 600mm centres and to a maximum of 900mm centres.*

9.6 *Bugle head screws must be embedded a minimum of 5mm into the* LOXO Cladding Panel *and a maximum of 10mm.*

Durability (suitability) Clause 1.2.1

10.1 The LOXO Cladding Panel Veneer System when used in accordance with this Appraisal Certificate and subjected to normal conditions of environment and use will meet the requirements of S1.2.1 of the BCA.

Maintenance:

10.2 Regular maintenance is essential to ensure the performance requirements of the BCA / NZBC are met and to ensure the maximum serviceability of the LOXO Cladding Panel Veneer System.

10.3 Regular cleaning (at least annually) of the paint coating is required to remove grime, dirt and organic growth as per the coating manufacturer's Technical Literature in order to maximize the life and appearance of the acrylic paint coating. Paint coatings must be reapplied every 10 years or in accordance with the paint manufacturers instructions. .

10.4 Regular inspections (annually) must be made on the system to ensure that all aspects of the LOXO Cladding Panel Veneer System including the coating system, renders, flashings and any sealed joints remain in a weatherproof condition. Any cracks, damaged areas or areas showing signs of deterioration that could allow water ingress, must be repaired immediately. The LOXO Cladding Panel Veneer System must be maintained and repaired in accordance with the instructions from LOXO.

10.5 Minimum ground clearance and adjacent clearances as set out in this Appraisal and Technical Literature must be maintained at all times during the life of the system to maintain the durability and weatherproofing of the system.

External Fire spread - Clause P2.3.1

11.1 The LOXO Cladding Panel Veneer System meets the performance requirements of the BCA for use as a Load Bearing External Wall. The LOXO Cladding Panel Veneer System provides an FRL of 90/90/90.Tested in accordance with AS 1530.4.

External Moisture - Clause P2.2.2

12.1 When installed in accordance with this Appraisal Certificate and Technical Literature, the LOXO Cladding Panel Veneer System will prevent the penetration of water that could cause undue dampness and/or damage to building elements and will therefore comply with Performance requirement P2.2.2 of the BCA.

12.2 The cavity must be sealed off from the roof and subfloor space.

12.3 The LOXO Cladding Panel Veneer System allows excess moisture present within the cavity at the completion of construction to be dissipated without causing permanent damage to the building elements to meet the performance requirement of the BCA.

12.4 The details provided within the Technical Literature for weatherproofing are based on the design principle of employing both a 1st and 2nd line of defence against moisture entry for joints, penetrations and junctions. Moisture ingress must be prevented by detailing any joinery or wall junctions as shown in the LOXO Cladding Panel Veneer System technical manual. Any weatherproofing details developed by a designer that are outside the scope of this Appraisal Certificate that are the responsibility of the designer .

12.5 The presence of a drained cavity does not reduce the requirement to ensure the cladding wall and all the relevant junctions, penetrations etc remain weather resistant.

Water Vapour

12.6 The LOXO Cladding Panel Veneer System is not a barrier to the passage of water vapour, and when correctly installed in accordance with both this Appraisal and Technical Literature will not create or increase the risk of moisture damage resulting from condensation. When installed over steel frame please refer to 12.7.

12.7 When the LOXO Cladding Panel Veneer System is installed over steel framing, 10mm (V.H) expanded polystyrene thermal break sheeting with a R value of at least 0.3, must be installed over the steel frame (stud, nog, top and bottom plate) to provide a thermal break in accordance with the requirements of the BCA. Building wrap is then dressed over the top of the sheeting followed by the installation of the cavity battens.

Thermal Performance - Clause P2.6.1

13.1 The LOXO Cladding Panel has a thermal rating from the manufacturer for the 50mm thick AAC panel of R0.39.

13.2 A table has been developed from the use of 70mm and 90mm wide timber framing studs at 600mm centres, with noggins at 1350mm centres, using Enviroseal Wall Wrap reflective foil wall wrap (sarking) with a R1.2 (summer) and R1.3 (winter), and insulation with a nominal R-Value of 2.0;
Refer to Thermal Performance Values shown on page 8.

Acoustic Performance

14.1 The LOXO Cladding Panel has an acoustic STC rating of 33 from the manufacturer for the 50mm thick AAC panel. A table has been developed from the use of 90mm wide timber framing studs at 600mm centres, with noggins at 1350mm centres, insulation with a nominal R-Value of 2.0 and a nominal 10mm plasterboard;
Refer to Acoustic Performance Values shown on page 9.

Installation Information

Installation Skill Level Requirement

15.1 Installation and finishing of the components and accessories supplied by LOXO and the

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accredited contractors must be completed by trained installers/applicators, certified by LOXO.

15.2 Installation of the accessories supplied by the building contractor must be completed by a tradesperson who has an understanding of cavity based cladding construction, in accordance with instructions given within the LOXO Cladding Panel Veneer System Technical Manual and this Appraisal Certificate.

System Installation

16.1 The building wrap (if required) must be installed by the building contractor in accordance with the wrap manufacturer's instruction, prior to the installation of the cavity battens and the rest of the LOXO Cladding Panel Veneer System. The building wrap shall be run horizontally and be continuous around corners. The wrap must be lapped not less than 75mm at horizontal joints and not less than 150mm over studs at vertical Joints.

16.2 Window and Door joinery must be installed by the building contractor in accordance with the LOXO Technical Literature.

16.3 The Window and Door joinery must be spaced outside of the wall frame to suit the thickness of the cavity batten system.

LOXO Cladding Panel Veneer System

16.4 Must be installed in accordance with the Technical Literature by LOXO accredited contractors.

16.5 The Technical Literature must be referred to during the inspection of the LOXO Cladding Panel Veneer System installations.

Finishing System

16.6 The application of the LOXO approved coating system must be applied in accordance with the manufacturers
instructions at all times.

Health and Safety

17.1 When cutting, drilling or grinding the LOXO Cladding Panel, this must be carried out in an open air or well ventilated area, and a dust mask, eye protection and gloves must be worn.

17.2 All aspects of cutting, drilling or grinding must comply with the latest regulations of Worksafe Australia (Occupational Health and Safety).

17.3 Refer to the Technical Literature from the relevant manufacturer for the safe use and handling of the components that make up the LOXO Cladding Panel Veneer System.

Basis of Appraisal

BEAL use the compliance verification procedure to demonstrate compliance with the relevant clauses of the BCA based on a risk analysis procedure. The following is a summary of the technical investigations carried out

Tests

18.1 The following testing of the LOXO Cladding Panel Veneer System and its respective components has been undertaken by BEAL unless otherwise noted:

18.1.1 BEAL opinion on BCA compliance was based on the evaluation of all details within the scope of this Appraisal and testing of LOXO Cladding Panel Veneer System to a weathertightness test method known as E2/VM1. The testing assessed the performance of the window head, jamb and sill details, meterbox head, jamb and sill details, vertical control joints, internal and external corners.

18.1.2 BEAL have also reviewed the details contained within the technical manual, and an opinion has been given by BEAL that the system will meet the performance requirements for a drained and non-ventilated cavity system.

18.1.3 Testing undertaken by OPUS laboratories in determining the compressive strength, dry bulk density and drying shrinkage of the LOXO Cladding Panel to verify durability of the system.

18.1.4 Corrosion protection of the steel wire reinforcement in the LOXO Cladding Panel was tested to verify durability and conducted by AZUMA design in Australia to AS2331.3.11 and ASTM B117.

Other Investigations

19.1 Wind loadings, self weight, seismic loadings, shear force, panel capacity, fastener pull through testing and calculations for the LOXO Cladding Panel Veneer System were determined by an independent Chartered Engineer in respect to the requirements of Structure. Structural and durability opinions were provided.

19.2 Assessment of Fire resistance of the 50mm thick LOXO Cladding Panel was based on a comparison of test data from other manufacturers testing for spread of fire and fire resistance based on AS1530.4.

19.3 Thermal Performance testing and calculations for the LOXO Cladding Panel Veneer System were determined by an independent Chartered Professional Engineer in respect to the requirements of Performance Requirement P2.6.1

19.4 Assessment of Acoustic Performance for the LOXO Cladding Panel Veneer System was based on a comparison of test data from other manufacturers testing for Acoustic performance.

19.5 Ease of application has been assessed

19.6 The Technical Literature for the LOXO Cladding Panel Veneer System has been examined by BEAL and found to be satisfactory.

Quality

20.1 The quality of materials, components and accessories supplied by LOXO is managed through the use of the Building Product Quality Plan.

20.2 The LOXO Building Product Quality Plan ensures continuous conformance with the quality requirements from purchase to supply of components.

20.3 LOXO Building Product Quality Plan is reviewed at least annually by BEAL.

20.4 Quality on site is the responsibility of the LOXO accredited contractors.

20.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, and general construction detailing in accordance with the instructions of LOXO and this Appraisal Certificate.

20.6 For a copy of this Technical Literature and any subsequent updates please refer to: www.loxo.com.au

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20.7 Building owners are responsible for the maintenance of the LOXO Panel Veneer Cladding System in accordance with instructions of LOXO and this Appraisal Certificate.

Sources of Information

- AS 2331.3.1 Methods of test for metallic and related coatings -Corrosion and related property test
- AS 3566 Self drilling screws for the building and construction industries.
- AS 3730 Guide to the properties of paints for buildings
- AS/NZS 1170:2002 Structural design actions
- ASTM B117 Standard practice for operating salt spray apparatus
- ASTM C 297: Standard test method for flatwise tensile strength of sandwich constructions.
- ASTM C 1386: Standard specification for precast autoclaved aerated concrete (AAC)
- NASH 3405:2006 Steel framed buildings
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber structures standard
- NZS 3604:1999 Timber framed Buildings
- NZS 4211:1985 Specification for performance of windows
- The Building Code of Australia 2011 Class 1 and Class 10 Buildings,
- NZS 4211:1985 Specification for performance of windows
- AS4859.1:2002 and Amendment 1:2006
- New Zealand Building Code Handbook and Approved Documents, Building industry Authority, 1992.

Concluding statement

21.1 In the opinion of BEAL, the LOXO Panel Veneer Cladding System is fit for purpose and will comply with the BCA to the extent specified provided that it is used, designed, installed and maintained as set out in this Appraisal Certificate.
The Appraisal Certificate is issued only to LOXO Cladding Systems (Pty) Ltd and is valid until further notification, subject to the conditions of this Appraisal.

LOXO Cladding Systems (Pty) Ltd T/A (LOXO)
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Conditions of Appraisal

1. This Appraisal Certificate :
   A) Relates only to the LOXO Panel Veneer Cladding System as described herein;
   B) Must be read, considered and used in full together with the Technical Literature
   C) Does not address any legislation, regulations, codes or standards, not specifically named herein;
   D) Is copyright of BEAL

2. The Appraisal Certificate holder continues to meet the quality requirements of the LOXO Building Product Quality Plan and has the Appraisal Certificate revalidated by BEAL on an annual basis.

3. LOXO Cladding Systems (Pty) Ltd shall notify BEAL and obtain approval of any changes in product specification or quality assurance prior to product being marketed including any trade literature, web site info or the like.

4. BEAL makes no representation as to:
   A) The nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   B) The presence or absence of any patent or similar rights subsisting in the product or any other product;
   C) Any guarantee or warranty offered by the Appraisal Certificate holder

5. BEAL's verification of the building product or system complying with one or more above-mentioned criteria is given on the basis that the criteria used were those that were appropriate to demonstrate compliance with the BCA at the date of this Appraisal Certificate. In the event that the criteria is withdrawn or amended at a later date, this Appraisal may no longer remain valid.

6. Any reference in this Appraisal Certificate to any other publication shall be read as a reference to the version of publication specified in this Appraisal Certificate.

Authorised Signatory

C R Prouse - Principal Building Scientist

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Thermal Performance Values

THERMAL TABLES FOR 50mm LOXO WALL SYSTEMS

Confirmed by Fricker Report

LOXO System	System Details – 70mm Frames (The following Systems are all based on 50mm LOXO Panel, 70mm Frame Thickness, and 10mm Plasterboard internal linings)	Total R Value m2K/W	
		Winter	Summer
5070-01	Panel + 20mm Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.80	0.78
5070-02	Panel + 20mm Cavity + Sarking + Frame + No Insulation + Plasterboard	1.52	1.39
5070-03	Panel + 20mm Cavity + Sarking + Frame + R2.0 Insulation + Plasterboard	2.90	2.69
5070-04	Panel + 20mm Cavity + No Sarking + Frame+R2.0 Insulation+ Plasterboard	2.90	2.69
5070-05	Panel + 40mm Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.80	0.78

Note: Sarking used in tables is Single Sided Reflective Foil Type

LOXO System	System Details – 90mm Frames (The following Systems are all based on 50mm LOXO Panel, 90mm Frame Thickness, and 10mm Plasterboard internal linings)	Total R Value m2K/W	
		Winter	Summer
5090-01	Panel + 20mm Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.80	0.78
5090-02	Panel + 20mm Cavity + Sarking + Frame + No Insulation + Plasterboard	1.56	1.40
5090-03	Panel + 20mm Cavity + Sarking + Frame + R2.0 Insulation + Plasterboard	2.90	2.69
5090-04	Panel + 20mm Cavity + No Sarking + Frame+R2.0 Insulation+ Plasterboard	2.90	2.69
5090-05	Panel + 40mm Cavity + No Sarking + Frame + No Insulation + Plasterboard	0.80	0.78
5090-07	Panel + 40mm Cavity + Sarking + Frame + R2.0 Insulation + Plasterboard	2.91	2.70

Note: Sarking used in tables is Single Sided Reflective Foil Type

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Acoustic Performance Values

EXTERNAL WALL SYSTEM

LOXO System	System Details – 90mm Frames (The following Systems are all based on 50mm LOXO Panel, 90mm Frame Thickness, and 10mm Plasterboard internal linings)	Acoustic Rating	
		Rw	Rw + Ctr
5090-01A	Panel + 40mm Cavity + No Sarking + Frame + R2.0 Insulation + Plasterboard	47	41
5090-02A	Panel + 40mm Cavity + Sarking + Frame + R2.0 Insulation + Plasterboard	47	41
5090-03A	Panel + 40mm Cavity + Frame+R1.6 SoundScreen + Soundchek Plasterboard	60	50

PARTY WALL SYSTEM

LOXO System	System Details – 90mm Frames The following PartyWall System is based on Discontinuous Construction using 50mm LOXO Panel and Standard 10mm Plasterboard	Acoustic Rating	
		Rw	Rw + Ctr
50PWS01	PlasterBoard + Frame + R2.0 Insulation + 10mm gap + Panel + 10mm gap + R2.0 Insulation + Frame + PlasterBoard	63	51

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Certificate of Test

No. 2363A

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This is to certify that the element of construction described below was tested by the CSIRO Division of Manufacturing and Infrastructure Technology in accordance with Australian Standard 1530, Methods for fire tests on building materials, components and structures, Part 4-2005, Fire-resistance test of elements of construction on behalf of:

Loxo Cladding Systems Pty Ltd
1331Stud Road
ROWVILLE VIC

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FSV 1525A.

PRODUCT NAME: 172-mm thick, Load-bearing Loxo Autoclaved Lightweight Aerated Concrete (AAC) panel wall system.

DESCRIPTION: The specimen comprised a load-bearing wall system, nominally 3000-mm high x 3000-mm wide x 172-mm thick. The wall system comprised of a timber stud frame lined on the unexposed face with 10-mm thick plasterboard, and on the exposed face with Loxo AAC panels. The wall's timber frame comprised 70-mm x 35-mm MGP10 structural radiata pine studs and noggins. The studs were set out at 450-mm centres with the noggins set out at 1000-mm from the top and bottom of the frame. The unexposed face of the timber frame was lined with 10-mm thick standard grade plasterboard. The plasterboard sheets, laid horizontally, were screw fixed to the timber frame using plasterboard screws at approximate 600-mm centres. All the joints and perimeter were taped and set with a base and top coat. The exposed face of the timber frame was lined with Loxo AAC Panels, nominally 2200-mm long x 600-mm wide x 50-mm thick, laid horizontally in a stretch bond pattern. The panels were screw fixed to 42-mm thick by 35-mm wide H3 Treated Pine Timber battens, installed along studs, using 75-mm long Bugle screws, at approximate 500-mm centres and 50-mm from panel horizontal joints, as shown in drawing numbered FT0112011, dated November 2011, by Loxo Cladding Systems. Loxo AAC Panels comprised autoclaved aerated concrete with an overall stated density of 560 kg/m3, reinforced with 3.2-mm diameter corrosion protected steel, as shown in drawing numbered NAJ120213001, dated 13 February 2012. The panel's butt joints were bonded together using a polymer modified cement-based adhesive (Loxo AAC adhesive).

The element of construction described above satisfied the following criteria for fire-resistance for the period stated

Structural adequacy	-	no failure at 121 minutes
Integrity	-	no failure at 121 minutes
Insulation	-	117 minutes

and therefore for the purpose of Building Regulations in Australia, achieved a fire-resistance level (FRL) of 120/120/90. The FRL is applicable for exposure to fire from the same side as tested.

This certificate is provided for general information only and does not comply with the regulatory requirements for evidence of compliance.

Testing Officer: Chris Wojcik Date of Test: 27 January 2012

Issued on the 27th day of April 2012 without alterations or additions. This Certificate supersedes Certificate of Test 2363 issued on 15th day of February 2012.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

This document is issued in accordance with NATA's accreditation requirements

CSIRO FIRE ASSESSMENT SUMMARY

- LOXO 50mm AAC External Wall Panel System – Fire Certificate COT 2363A and full report FSV 1525A

With the following variations approved as part of CSIRO Fire Assessment FCO 2915

(i) be capable of achieving a fire-resistance level of 120/120/90, with stud frame and supporting a load of 11.4kN/m or less if
   a. the studs were changed to
      i. 70-mm x 45-mm MPG10 timber studs at 450-mm centres;
      ii. 90-mm x 35-mm MPG10 timber studs at 450-mm centres;
      iii. 90-mm x 45-mm MPG10 timber studs at 450-mm centres;
      iv. 90-mm x 35-mm MPG10 timber studs at 600-mm centres;
      v. 90-mm x 45-mm MPG10 timber studs at 600-mm centres;
   b. the battens were changed to 20-mm or 40-mm steel battens;
   c. sarking or insulation complying with Specification C1.10 of the BCA was installed within the wall; or
   d. the Loxo AAC panel size was maintained at 50-mm or increased to a thicker panel.

(ii) be capable of achieving a fire-resistance level of 120/120/90, with stud frame and supporting a load as calculated by the relevant Australian design codes if
   a. the studs were changed to
      i. 76-mm x 35-mm x 0.55 BMT steel studs at 450-mm centres;
      ii. 76-mm x 35-mm x 0.55 BMT steel studs at 600-mm centres;
      iii. 92-mm x 35-mm x 0.55 BMT steel studs at 450-mm centres;
      iv. 92-mm x 35-mm x 0.55 BMT steel studs at 600-mm centres;

(iii) be capable of achieving a fire-resistance level of 120/120/120, if construction as per (i) or (ii), above, but with the 10-mm thick standard plasterboard sheet replaced by 13-mm fire-grade plasterboard.

(iv) be capable of achieving a fire-resistance level of 90/90/90, supporting a load of 11.4kN/m if construction as a party wall as detailed in drawing numbered 20-03-12, Sheet 1,2 and 3 dated January 2012(attached).

With the following variations approved as part of CSIRO Fire Assessment FCO 2944

(i) be capable of achieving a fire-resistance level of 120/120/120, with stud frame and supporting a load as per defined in FCO-2915, constructed as a party wall as detailed in drawing titled “LOXO 75mm PANEL PARTY WALL DETAIL” dated July 2012 (attached), provided the fixing spacing along the height of the AAC Loxo panels is limited to a maximum 3000-mm centre per panel.

(ii) be capable of achieving a fire-resistance level of -/120/120, if constructed as an internal wall as detailed in drawing titled “LOXO 75mm INTERNAL WALL DETAIL” dated July 2012 (attached).

(iii) be capable of achieving a fire-resistance level of 60/60/60, with stud frame and supporting a load as per defined in FCO-2915, constructed as detailed in drawing titled “LOXO 50mm PANEL PARTY WALL DETAIL” dated July 2012 (attached).

(iv) be capable of achieving a fire-resistance level of 120/120/120, with stud frame and supporting a load as per defined in FCO-2915, constructed as detailed in drawing titled “LOXO 50mm PANEL SEPARATION WALL DETAIL” dated August 2012 (attached) provided the ratio of stud loading to stud loadbearing capacity is less than 0.6.

"TOTAL R"

THERMAL PERFORMANCE CALCULATIONS

TO AS/NZS 4859.1:2002/Amdt 1 (Dec 2006)

The following calculations by James M Fricker Pty Ltd are based upon:

a) AS/NZS 4859.1:2002/Amdt 1 (Dec 2006) "Materials for the thermal insulation of buildings. Part 1: General criteria and technical provisions",

b) the Australian Institute of Refrigeration Air-conditioning & Heating (AIRAH) Handbook (2007 Edition), and (if necessary) the ASHRAE Fundamentals Handbook.

Results reported are for the **insulation path** only per the original AS/NZS 4859.1:2002 Clause 1.5.3.3 – *"Total thermal resistance - A total resistance associated with a material or a system or construction of materials, specified as a Total R, including surface film resistances"* to be in alignment with the BCA2011 Specification J1.3 examples.

R-values for parallel-faced air cavities were calculated using the Reflect-3 computer software that is based on Robinson and Powell data and research by Oakridge National Laboratory, USA. These calculations are iterative and only the converged results are shown. (Note that Reflect-3 calculations are limited to a maximum 100mm air gap.)

Total R-values are based on product in-service conditions in accordance with AS/NZS 4859.1:2002/Amdt 1 (Dec 2006) including the alteration of insulation material R for temperature, and derations of reflective foil emittances due to dust as noted. Where a cavity is sealed, it is assumed there is no dust and hence emittance is not derated.

The calculations have not yet been independently verified per requirements of AS/NZS 4859.1:2002/Amdt 1.

Each calculation result is subject to any specific notes and assumptions listed on the calculation.

If a construction differs from the described system, the thermal resistance may be different.

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James M. Fricker
MIEAust CPEng
Chartered Professional Engineer
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SUMMARY OF RESULTS

JMF Calc.	*Calculations as at 6/12/2011*	Total R "s" Summer	Total R "w" Winter	Total U "s" Summer	Total U "w" Winter
365w00	**50mm Loxo Panel, 70mm to 140mm unreflective air gap, 10mm plasterboard**	**R0.78**	**R0.80**	**1.28**	**1.25**
365w011a	**50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), 70mm reflective air gap, 10mm plasterboard**	**R1.39**	**R1.52**	**0.72**	**0.66**
365w02a	**50mm Loxo Panel, 20mm unreflective air gap, (no sarking), R2.0 bulk insulation (e.g. 70mm 22.1kg/m3 glasswool), 10mm plasterboard**	**R2.69**	**R2.90**	**0.37**	**0.34**
372w031a	**50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 70mm 22.1kg/m3 glasswool), 10mm plasterboard**	**R2.69**	**R2.90**	**0.37**	**0.34**
365w011b	**50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), 90mm reflective air gap, 10mm plasterboard**	**R1.40**	**R1.56**	**0.72**	**0.64**
365w02b	**50mm Loxo Panel, 20mm unreflective air gap, (no sarking), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard**	**R2.69**	**R2.90**	**0.37**	**0.34**
372w032b	**50mm Loxo Panel, 20mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard**	**R2.69**	**R2.90**	**0.37**	**0.34**
372w033b	**50mm Loxo Panel, 40mm unreflective air gap, noglare single-sided foil sarking (e=0.87/0.03), R2.0 bulk insulation (e.g. 90mm 10.2kg/m3 glasswool), 10mm plasterboard**	**R2.70**	**R2.91**	**0.37**	**0.34**

NOTES: The above shows Total R determinations based upon AS/NZS 4859.1:2002/Amdt 1 2006, Materials for the thermal insulation of buildings. The insulation thermal resistance is calculated for the Australian air temperature differences (winter: 18°-12°C = 6K, summer: 36°-24°C = 12K) per AS/NZS 4859.1:2002/Amdt 1 2006.

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Our Ref: Loxo Codemark Thermal Supplement 120521

21/05/2012

Loxo Cladding Systems
1331 Stud Road
Rowville, VIC, 3178

Attn: Joe Zarb
By Email: j.zarb@loxo.com.au

Loxo 50mm AAC Panel System
Energy Efficiency Supplement

Loxo Cladding Systems

Expansion of thermal performance data to meet BCA Energy Efficiency D-t-S requirements

JMF Calc. Ref. [1]	Element	R-Value (m^2K/W) Winter	Summer	Comments
365w02b	Outdoor air film	0.040	0.040	
	50mm Loxo panel	0.394	0.394	
	20mm unreflective air gap	0.191	0.159	
	90mm stud with R2.5 glasswool (10.2kg/m^3)	2.500	2.400	conservative est.
	10mm plasterboard	0.059	0.059	
	Indoor air film	0.120	0.120	
	System R-Value	**3.30**	**3.17**	
365w32b	Outdoor air film	0.040	0.040	
	50mm Loxo panel	0.394	0.394	
	20mm unreflective air gap	0.191	0.159	
	No glare single sided foil sarking (e = 0.87/0.03)	0.000	0.000	
	90mm stud with R2.5 glasswool (10.2kg/m^3)	2.500	2.400	conservative est.
	10mm plasterboard	0.059	0.059	
	Indoor air film	0.120	0.120	
	System R-Value	**3.30**	**3.17**	
365w33b	Outdoor air film	0.040	0.040	
	50mm Loxo panel	0.394	0.394	
	40mm unreflective air gap	0.202	0.168	
	No glare single sided foil sarking (e = 0.87/0.03)	0.000	0.000	
	90mm stud with R2.5 glasswool (10.2kg/m^3)	2.500	2.400	conservative est.
	10mm plasterboard	0.059	0.059	
	Indoor air film	0.120	0.120	
	System R-Value	**3.32**	**3.18**	

ICANZ Ref. [2]	Element	R-Value (m^2K/W) Winter	Summer	Comments
W0113	Outdoor air film	0.040	0.040	
Brick veneer with	50mm Loxo panel	0.394	0.394	
90mm stud and	Unventilated 40mm air gap	0.659	0.568	
double-sided	Double sided anti-glare foil	0.000	0.000	
anti-glare foil with	90mm R2.5 wall batts	2.621	2.373	
R2.5 wall batts	10mm plasterboard	0.059	0.059	
	Indoor air film	0.120	0.120	
	System R-Value	**3.89**	**3.55**	

References

1 James M Fricker Pty Ltd Report i365a
2 ICANZ Insulation Handbook, Nov. 2010

KOIKAS ACOUSTICS PTY LTD

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ACOUSTIC CERTIFICATE STATEMENT
50 mm LOXO PANEL EXTERNAL WALL SYSTEM

Calculations were undertaken by Koikas Acoustics utilising a software program called Insul V6.4.13 of eight (8) 50 mm Loxo panel external wall systems. This software program reports accuracy of ±3 Rw rating points.

The 50 mm Loxo Panel External Wall Systems are to be constructed of the following building materials:

- One layer of 10 mm thick plasterboard on the internal side;
- One layer of R1.5 insulation batts on the inner side of the plasterboard and fitted between timber/steel studs;
- 20 or 40 mm cavity battens, and
- One layer Loxo 50 mm aerated autoclaved concrete (AAC) panel on the external side.

Following is a summary of the calculated acoustic ratings of the eight wall systems:

50 mm Loxo Panel External Wall System	Rw [dB]	Ctr [dB]	Rw + Ctr [dB]
1. 70 mm timber studs + 20 mm cavity battens	45	-4	41
2. 70 mm timber studs + 40 mm cavity battens	45	-3	42
3. 90 mm timber studs + 20 mm cavity battens	45	-3	42
4. 90 mm timber studs + 40 mm cavity battens	45	-3	42
5. 76 mm steel studs + 20 mm cavity battens	53	-7	46
6. 76 mm steel studs + 40 mm cavity battens	53	-6	47
7. 92 mm steel studs + 20 mm cavity battens	53	-6	47
8. 92 mm steel studs + 40 mm cavity battens	54	-6	48

Furthermore, if the Loxo 50 mm aerated autoclaved concrete (AAC) panel was to be replaced with the Loxo 75 mm AAC panel, the Rw rating will increase by approximately 2 dB.

Date: 2nd March 2012

Our Reference: *2156R20120302mfLoxoCertificateExternalWall.docx*

GLOBAL ENVIRONMENTAL STANDARD LICENCE

ISO 14024 – Third Party Environmental Labeling Program

LICENCE NO: LOX-2011
ISSUED TO:

Loxo Cladding Systems Pty Ltd

PRODUCT(S) NAME:

Loxo Panels

STANDARD:

GES / CE / 2011

ADDRESS:

1331 Stud Road
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Re-certification Date:

27th November 2016

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